COMPARING FEMINIZING HORMONE THERAPY REGIMENS

by

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(Under the Direction of Adam Davis)

ABSTRACT

Transgender and gender diverse patients report the desire to have their primary care providers handle their gender affirming hormone therapy, but healthcare professionals report feeling undereducated/underqualified to manage this care. Data comparing feminizing hormone therapy regimen efficacy and risk are scarce. We distributed a 96-question survey, available for 100 days, to four online groups with transgender members to collect data comparing efficacy and risk of feminizing hormone therapy regimens. The survey contained questions about what medications participants were taking, how medications were administered, what results and side effects participants experienced, and patient satisfaction with the results of the medication. Results indicated 21 different hormone regimens were being used, there is a lack of uniformity in drug doses or administration routes, and 18% of participants received at least one medication through non-prescription sources. Regardless of medication and dosage, participants were more likely to be satisfied than unsatisfied with resulting physiological changes.

INDEX WORDS: antiandrogen, estrogen, fat distribution, muscle mass, progesterone, skin changes

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CHAPTER 1

INTRODUCTION

A transgender person is an individual whose gender identity, the gender they identify with internally, varies from that of their assigned gender at birth (AGAB) (Rajkovic et al., 2022). Making up between 0.33% (Coleman et al., 2022) and 1.0% of the population (Herman and Flores, 2025), transgender and gender diverse (TGD) people are at increased risk for minority stress, a type of stress which occurs to marginalized groups over a long period of time due to societal pressures (Bauer et al., 2015). In recent years these societal pressures have increased as governmental bodies work to limit the rights of TGD people and publish methodologically flawed (Noone et al., 2025) privately commissioned literature reviews independent of medical bodies, such as the "Cass Review," formally known as the "Independent Review of Gender Identity Services for Children and Young People", in the United Kingdom. Transgender and gender diverse people represent the "T" in the LGBTQ+ community, and of all LGBTQ+ people face the highest rates of violence and discrimination in several countries (Glick et al., 2018, Milena et al., 2018).

Aside from discrimination from governmental bodies and societal pressures in opposition to the TGD person's best interest, such as the pressure to conform to a gender binary, one of the greatest stressors for TGD people is that of gender dysphoria. Gender dysphoria is an inner turmoil originating from an incongruence between a person's gender identity and the gender society perceives the TGD individual to be. The World Professional Association for Transgender Health and the Endocrine Society agree that the best method for treatment of gender dysphoria is gender affirming care, which is any effort to help align the body with the gender identity, with the goal of

helping the individual “achieve lasting personal comfort” (Coleman et al., 2022). Many methods are employed to this end, including social changes such as changing one’s name and attire, and medical interventions such as exogenous gender affirming hormone therapies or gender affirming surgery. The goal of gender affirming hormone therapy (GAHT) for TGD people is to maintain hormones in the normal physiological range for their gender identity (Hembree et al., 2017) for the purpose of causing physiological changes to the body to help match gender presentation with gender identity. Some TGD people do not conform to a gender binary, perceiving themselves to be somewhere in between man and woman, to be both, or to be something else entirely. Due to the wide spectrum of genders, the World Professional Association for Transgender Health suggests that guidelines should be flexible to meet the varied needs and cultural perspectives of patients (Coleman et al., 2022).

Transgender and gender diverse people most often desire secondary sex characteristics different than that of their AGAB. Cisgender women most often report a desire to be “in proportion” with hips and breasts the same size as primary physical indications of body image approval (Grogan et al., 2013), and it can be inferred that this desire for proportional body shapes is consistent across all women, not just those who were AFAB. Because secondary sex characteristics are caused by the actions of sex steroids on target tissues, manipulation of these sex steroids can lead to an individual developing secondary sex characteristics with which they are more comfortable. These sex characteristics can influence how a person is perceived by those around them and thus impact an individual's dysphoria. Most prominent among secondary sex characteristics are muscle mass, fat distribution, presence of breasts, facial hair, and vocal pitch. Breast growth, facial hair, and vocal pitch are irreversible changes. This means that taking testosterone does not cause breasts to regress, and that taking estrogen does not cause facial hair

to recede or voice pitch to elevate. Treatment options for the secondary sex characteristics not affected by hormone therapy for transgender men, individuals assigned female at birth who desire masculinity, include 'binding,' which is the compression of the breasts, or mastectomy. For transgender women, individuals assigned male at birth who desire femininity, shaving, laser or electrolysis is required for hair removal. Vocal therapy with the goal of consciously and constantly manually elevating the vocal pitch and resonance is required to counteract the virilized vocal cords. For transgender women taking estradiol, breast growth, therefore, is one of the most important changes, as is vocal deepening and facial hair growth for transgender men taking testosterone. Secondarily to those aspects is muscle mass and fat distribution changes, which are also expected to occur, re-aligning the body's composition to more closely resemble that of the individual's gender identity. Aside from these secondary sex characteristics, a myriad of other effects are possible, including changes in genital function, body hair, libido, skin texture, mood, sleep, and energy.

Traditionally, gender affirming hormone therapy, also known as hormone replacement therapy (HRT), hormone therapy (HT) or feminizing hormone therapy (FHT) for transgender women and masculinizing hormone therapy (MHT) for transgender men, involves adding exogenous sex steroid hormones to achieve serum concentrations in line with the gender identity of the individual. Due to the diverse range of potential gender identities, some participants may desire low level hormone concentrations or even no sex steroids at all to attempt an androgynous appearance. The complete lack of sex steroid hormones can cause numerous deleterious health complications, such as osteoporosis and cardiovascular issues. This study will focus on TGD people seeking feminization via exogenous hormone administration.

Feminizing hormone therapy, or 'feminizing GAHT', also known as E-GAHT, requires that the endogenous testosterone be suppressed and serum estradiol levels be increased to match the serum concentrations of cisgender women. While the knowledge that something in ovarian extracts could treat hot flashes in peri and post-menopausal women was first uncovered in the late 1890s, the term "estrin," which became the basis for the words estrone, estradiol, and estriol was not coined until 1926 (Fritz, 2011). Milligram amounts of crystalline estrogen were isolated from the urine of pregnant women by 1929, but this took large amounts of urine (Fritz, 2011). It was not until 1936 that pure estradiol could be isolated in significant amounts, and even then, was isolated at great expense (Fritz, 2011). Conjugated equine estrogens, estrogen sulfates extracted from the urine of pregnant mares, offered a viable alternative to extraction from the urine of pregnant women, slightly reducing cost (Fritz, 2011). Ethinylestradiol, a synthetic derivative of estradiol which includes a 17α-ethinyl group, as well as estrin products extracted from urine and ovaries, were being used for patient treatment as early as the 1930s (U.S. Food and Drug Administration, 2007, Fritz, 2011). Both ethinylestradiol and conjugated equine estrogens enhance deleterious hepatic effects due to preferential liver extraction of these compounds, regardless of administration route (Fritz, 2011).

When seeking GAHT, TGD people encounter a variety of barriers to their care. Healthcare professionals may be discriminatory, referring to TGD people with names and pronouns they have eschewed, or even verbally harassing them, which causes psychological distress (Beagen et al., 2015, Puckett et al., 2018). This discrimination may cause TGD people to become uncomfortable discussing their status as TGD with health care professionals, feeling that friendly and knowledgeable healthcare professionals are rare (Bauer et al., 2015, Glick et al., 2018). Nonbinary and gender diverse people, those TGD people whose gender identities fall outside of the traditional

binary perspective of gender (Puckett et al., 2018), may struggle even more than their binary TGD peers with acceptance when healthcare professionals maintain a binary view of health care treatment options, and may leave (Glick et al., 2018, Puckett et al., 2018). Healthcare professionals treating TGD people may fear malpractice suits or losing their medical license, feeling that they do not know enough about TGD healthcare to properly treat patients (Dewey 2015) and therefore sending TGD people to specialists for medical issues which are unrelated to a TGD person's status as TGD (Bauer et al., 2015). Distrust of healthcare professionals, hostile experiences, or overly complex or taxing requirements when seeking treatment may cause a TGD person seeking GAHT to turn to sourcing medications through third party, non-prescription sources from outside of the healthcare system for the relief of gender dysphoria ("Do it yourself", or "DIY" medication) (Glick et al., 2018).

Though TGD people are on average more highly educated than their cisgender counterparts, they are more poorly paid (Puckett et al., 2018), and the most reported barrier to gender affirming care is financial issues. Do it yourself GAHT use may be associated with low income or financial instability (Rotondi et al., 2013). Insurance companies may seek to avoid covering GAHT and provide further obstacles, such as requiring a patient to have multiple providers and creating loopholes to deny care (Glick et al., 2018, Puckett et al., 2018, Hines et al., 2019).

Healthcare professionals report not being educated on LGBTQ healthcare concerns in their medical training unless they specifically seek it out through non-required electives (Beagan et al., 2015). Healthcare professionals being unfamiliar with gender affirming care leads to those few knowledgeable and accepting providers often being far away from TGD patients (Puckett et al., 2018) or patients feeling they need to educate their providers and advocate for themselves (Puckett

et al., 2018, Bell and Purkey, 2019). Transportation and increased specialist costs caused by both insurance companies' restrictions and insufficiently informed healthcare professionals represent further financial barriers (Bell and Purkey, 2019). Transgender and gender diverse people prefer to receive their hormones along with their other care through their primary care provider (Hines et al., 2019) and have overall modest expectations for their healthcare professionals, wanting only kindness, empathy, and a willingness to treat (Bell and Purkey, 2019). Despite TGD people wanting their primary care providers to handle their GAHT, healthcare professionals feel like they are not adept enough to properly provide treatment. Transgender and gender diverse people present to their primary care providers with the intention to be allowed GAHT, potentially overemphasizing aspects of their life which they feel are more likely to be taken seriously, which can cause healthcare professionals to distrust their patients (Dewey, 2015, Brooker and Loshak, 2020). Hallmarks of a healthcare professional that a TGD patient would be comfortable with include things as simple as not being "aloof, uninterested, or uncomfortable" when treating and discussing issues related to transgender status or healthcare (Hines et al., 2019, p. 4). For this reason, this study aims to break down some informational barriers for healthcare professionals by cataloguing the most commonly used GAHT regimens and determining if patients' responses to their GAHT, in terms of satisfaction and risk profile, were associated with the specifics of their hormone regimens, such that healthcare professionals will be more knowledgeable about side effects and more comfortable and competent when prescribing hormones to their TGD patients.

Though the World Professional Association for Transgender Health's Standards of Care indicates that departures from the Standards of Care should still be documented for legal protection (Coleman et al., 2022), van Velzen et al. (2020) suggest that protocolized, 'one size fits all' care may be worse for health and satisfaction outcomes than individualized care, and clinicians treating

TGD people should emphasize the potential variability in outcomes. Indeed, as treatment continues, the range of potential outcomes becomes increasingly variable, with mean values decreasing in applicability to the individual. Thus, the results of this study should be used only to aid in the creation of a personalized GAHT plan, and to inform decisions based on risk profile.

Literature review

HPG axis

In both TGD people not taking GAHT and cisgender people, those individuals whose gender identity is aligned with their AGAB, hormone levels are regulated through the hypothalamic-pituitary-gonadal axis (Figure 1.1). The hypothalamus, a region of the brain, releases gonadotropin releasing hormone (GnRH), also known as luteinizing hormone releasing hormone (LHRH) in a pulsatile manner, which stimulates the pituitary gland to release either luteinizing hormone (LH) or follicular stimulating hormone (FSH) depending on pulse frequency. LH and FSH act on the gonads, and it is at this level that sexual differences begin. Ovaries produce estradiol and progesterone, along with other estrogens and trace amounts of testosterone. Testes produce testosterone and dihydrotestosterone (DHT).

Excluding intersex individuals, people assigned female at birth (AFAB) have ovaries, while those assigned male at birth (AMAB) have testes. Ovaries contain two major cell types of interest for sex steroid hormone production, the granulosa and theca cells. Theca cells, upon stimulation by LH, produce androgens, specifically testosterone. Upon stimulation by FSH, granulosa cells produce aromatase, an enzyme which converts testosterone to estradiol and androstenedione to estrone (Figure 1.2). Together, the theca and granulosa cells are able to produce estradiol, which is one of the most important sex steroid hormones for female development.

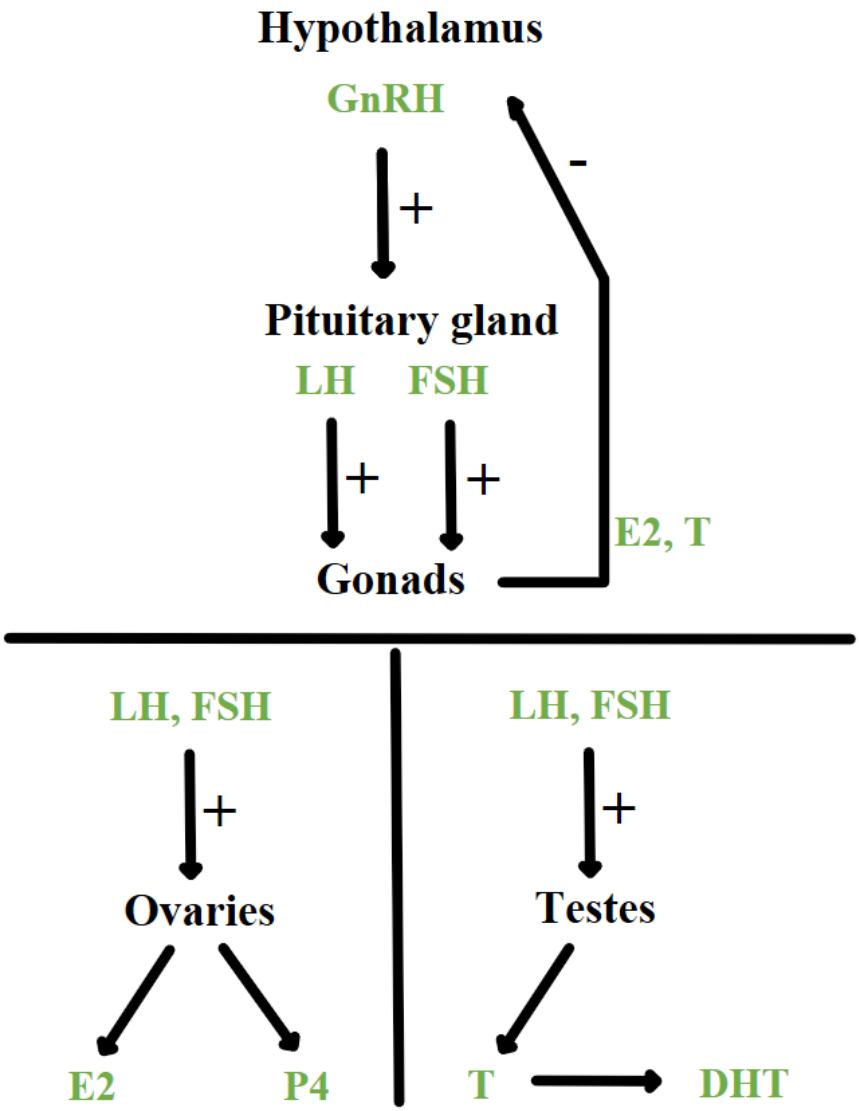

Figure 1.1. The hypothalamic pituitary gonadal (HPG) axis involves the hypothalamus releasing gonadotropin releasing hormone (GnRH) in a pulsatile manner, stimulating the pituitary gland to release luteinizing hormone (LH) and follicle stimulating hormone (FSH), which act on the gonads. At the level of the gonads, sex differences begin, with ovaries producing estradiol and progesterone, along with other estrogens and trace amounts of testosterone, and testes producing testosterone and dihydrotestosterone (DHT). Estradiol and testosterone act as negative feedback signals on the hypothalamus, limiting the production of GnRH.

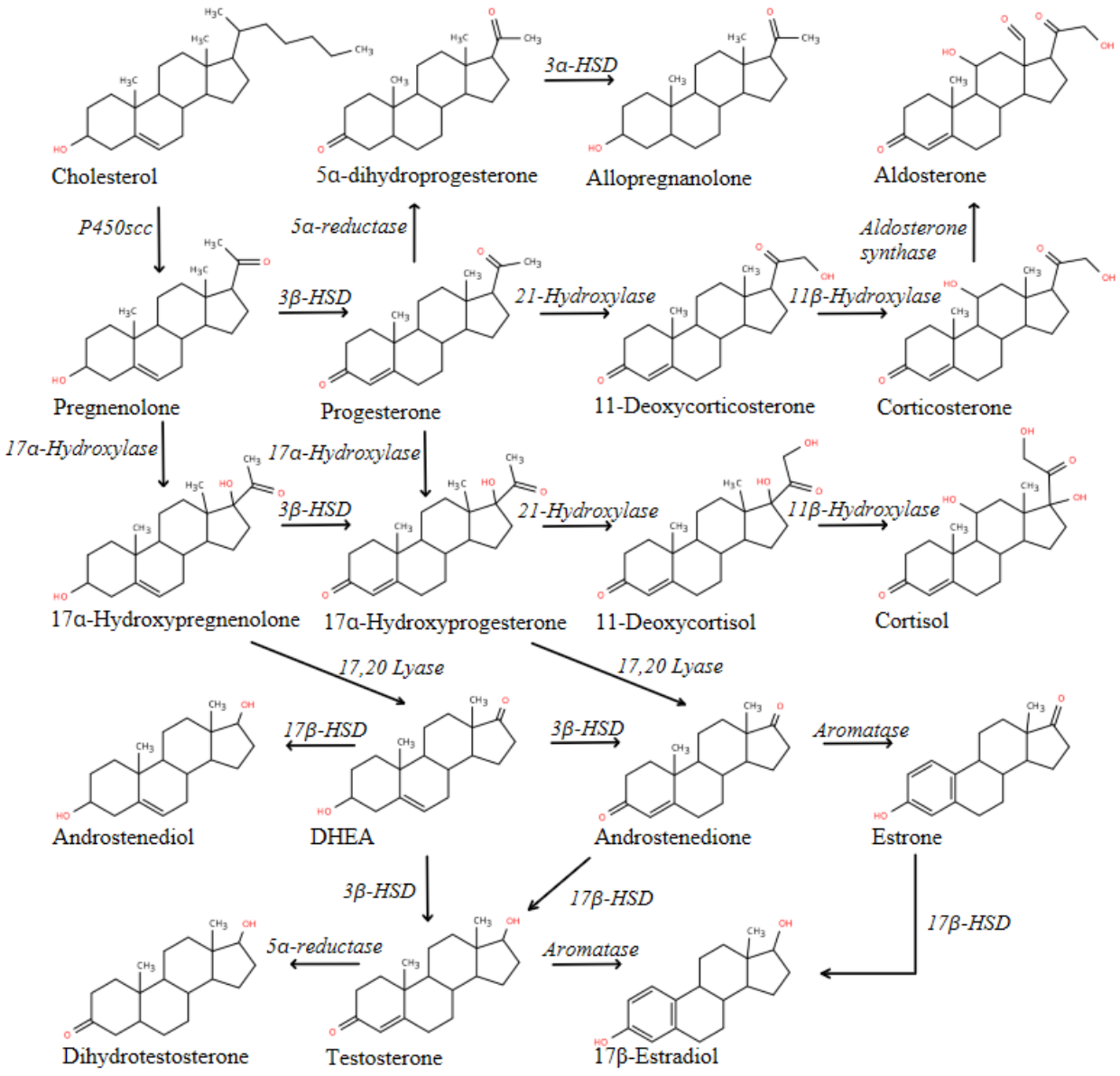

Figure 1.2. The hormone production pathway from cholesterol to the major sex steroids, testosterone, dihydrotestosterone (DHT), estradiol, and progesterone, as well as cortisol and aldosterone. P450scc is cytochrome P-450 side chain cleavage enzyme, 3α-HSD is 3α-Hydroxysteroid dehydrogenase, 3β-HSD is 3β-Hydroxysteroid dehydrogenase, 17β-HSD is 17β-Hydroxysteroid dehydrogenase, and DHEA is dehydroepiandrosterone

After ovulation, granulosa cells surrounding the ovulated oocyte convert to granulosa lutein cells, making up the corpus luteum, which produces progesterone, a sex steroid vital for the healthy menstrual process and physical maturation.

Testes have a similar set of two major cell types of interest, the Leydig and Sertoli cells. Leydig cells, upon stimulation by LH, produce testosterone and DHT. Sertoli cells are primarily involved in spermatogenesis and are stimulated primarily by FSH. To maintain appropriate levels of sex steroid hormones, a negative feedback mechanism is employed, with estradiol signaling the hypothalamus to reduce GnRH production when sex steroid hormone levels are optimal. Importantly, estradiol is the major negative feedback signaling hormone for both testicular and ovarian systems. This negative feedback is facilitated by the intermediate kisspeptin system which is at the 'top' of the HPG axis and modulates GnRH secretion (Xie et al., 2022). Hypothalamic kisspeptin neurons are highly sensitive to estradiol and have ERα receptors (Starrett and Moenter, 2023). Testes-based endocrinological systems without exogenous estradiol activate the kisspeptin system via aromatization of testosterone into estradiol via adipose tissue-produced aromatase.

Reference ranges

While concentrations of sex steroids can vary widely between people and even when taken during different times within the same person, general trends for fluctuations of hormone levels as well as estimates of normal ranges can be calculated (Stricker et al., 2006). In the ovulating woman, sex steroid concentrations fluctuate on an approximately circalunar timescale, known as the menstrual cycle, which can be divided into two phases, known as the luteal and follicular phases. The follicular phase is the days prior to ovulation of an oocyte, denoted as such due to the growing follicle, and the luteal phase is the days after the ovulation, denoted as such due to the presence of the corpus luteum. Estradiol rises from a baseline mean of just over 100 pmol/L during the

follicular phase up to a peak of over 900 pmol/L at the time of ovulation, decreasing to just over 250 pmol/L within the next few days before rising again to just over 530 pmol/L a week after ovulation, and then decreasing again over the following week. Thus, the reference ranges for estradiol are between 100 pmol/L and up to 900 pmol/L at the extreme. In comparison, cisgender men's expected estradiol concentrations range between 12 pmol/L to up to 150 pmol/L (Chadid et al., 2019, Verdonk et al., 2019, Frederiksen et al., 2020). Prolonged estradiol concentrations at the peak of ovulation are likely supraphysiological, but in GAHT, the Endocrine Society recommends serum estradiol levels to be between 367-734 pmol/L. Serum testosterone values are likewise recommended to be maintained at the level of premenopausal cisgender women – less than 50 ng/dL (Hembree et al., 2017).

Progesterone levels are characterized by a rapid increase after ovulation, with concentrations reaching over 40 nmol/L a week after ovulation, up from a baseline of between 0.5 and 1.66 nmol/L during the follicular phase (Stricker et al., 2006). Due to the lack of research suggesting progesterone should be included in feminizing hormone therapy (FHT) there are no given reference ranges, but in keeping with the concentrations seen in cisgender women, a range between 0.5 and 40 nmol/L is likely physiologically safe. It should be emphasized that prolonged high levels of progesterone are physiologically inequivalent to the concentrations cisgender women experience during the circalunar cycle, but no research has been completed comparing the efficacy of constant hormone levels with the efficacy of cyclically varying hormone levels among TGD people receiving FHT.

Administration method

Administration of sex steroids can be accomplished through multiple methods. Oral administration of estradiol requires hormones to pass through the gastrointestinal tract prior to

entering the blood stream. Any method of medication administration located outside of the digestive tract is considered parenteral. This includes gels, creams, patches, intramuscular and subcutaneous injections, implanted pellets, and even sublingual tablet administration, which bypasses the gastrointestinal tract. Some studies specify the type of parenteral administration they are studying, such as injection or transdermal application (gel, cream, patch), and this study will not generalize these specifications into the broader 'parenteral' category, but there are key differences between oral and parenteral administration forms.

Gastrointestinal tract hepatic filtration leads to 'first pass metabolism' or the first pass effect. During this process, orally administered estradiol becomes partially metabolized into estrone, another estrogen naturally produced by the ovaries (Tebbens et al. 2022). Because of this, the systemic and hepatic concentration of estrone is higher among users of oral estradiol when compared to that of users of transdermal estradiol formulations. Estrone is a weak estrogen agonist, having both reduced binding affinity and receptor activation, which means that in higher concentrations, it will compete with estradiol for the estrogen receptors, potentially reducing the effects of estradiol on upregulating target RNA transcription (Lundström et al., 2015, Tebbens et al., 2022). Despite this, no association between estrone concentration and changes in fat percentage, breast development, or lean body mass have been shown (Klaver et al., 2018, Tebbens et al., 2022).

Oral estradiol use has been shown to be associated with increased thrombin generation (Bagot et al., 2010), which may increase cardiovascular risk. This correlation between thrombin generation and estradiol administration was not seen when estradiol was administered transdermally. This high thrombin generation correlated with estrone levels, implying that the thrombin generation may be mediated by estrone (Bagot et al., 2010). Oral estradiol impairs

metabolic/endocrine function of the liver with an increase in hepatic estrogen concentration leading to a decrease in IGF-1 production, which does not occur when estrogen is delivered through a parenteral route, unless in very high, supraphysiological concentrations, wherein the liver estradiol concentration matches that reached through oral estradiol administration. This may imply that the oral administration route more easily surpasses hepatic estradiol physiological concentrations seen in cisgender women (Meinhardt and Ho, 2006). Injectable estradiol alone is effective at decreasing testosterone concentrations, while oral estradiol with added antiandrogens is ineffective at decreasing testosterone concentrations to desired levels in up to one third of patients (Misakian et al., 2025). Additionally, oral estradiol shows significant peaks and troughs not present in transdermal applications (Friend et al., 1996).

Physiological actions of sex steroid hormones

Sex steroids act on target cells throughout the body. There are a handful of types of estrogen receptors, including the nuclear estrogen receptors, ERα and ERβ, and the membrane estrogen receptors GPER1, and GPR30 (Fuentes and Silveyra, 2019). The nuclear estrogen receptors act as ligand activated transcription factors, moving into the nucleus to directly interact with DNA, upregulating target gene expression. Additionally, estrogen receptors can act in non-genomic, fast acting ways by influencing signal transduction and then increasing production of secondary intracellular messengers such as cAMP, leading to specific signaling cascades. Estrogen receptors are systemic, with receptors present in a variety of cells. Two endocrinological systems of note impacted by estrogen are renin aldosterone angiotensin system (RAAS) and the insulin and insulin-like growth factor systems. For both systems, growth hormone (GH) is a major regulator of estrogen's action.

Estrogen inhibits GH's action on the RAAS, thereby reducing renin activity and angiotensin production (Ho et al., 2023). Estrogen's effect on the RAAS is route dependent, with hepatic angiotensinogen production increased due to oral administration of estrogen when compared to an equivalent effective transdermal dose, as measured by uterine response in rats (Elger et al., 2017), likely due to increased estrogen activity in the liver due to first pass metabolism exclusive to oral administration. Oral administrations require higher doses of estradiol due to the liver metabolizing a large portion of the exogenous estradiol into estrone – indeed, while estrone is increased eightfold compared to baseline due to transdermal exogenous estradiol application, it is increased thirty-onefold due to oral application sufficient to reach the same systemic estradiol concentrations (Friend et al., 1996) The hepatic angiotensinogen production counteracts the dampening effect of estradiol on GH's stimulation, leading to the RAAS being stimulated via oral estradiol administration, and suppressed via parenteral estradiol administration.

The effects on the RAAS are further complicated by the administration of spironolactone, an aldosterone antagonist commonly used by TGD patients in concert with estradiol administration due to its antiandrogenic effects. Together with oral estradiol administration, an aldosterone antagonist has potential to markedly increase blood pressure and potassium concentration, though the RAAS stimulatory effects of parenteral administration routes of estradiol may be in part be counteracted by the administration of an aldosterone antagonist. At the time of writing this study, the intricacies of how the interactions between spironolactone and the varied administration routes of exogenous estradiol TGD people use on the RAAS have not been studied.

Oral estrogen administration impairs endocrinological functioning of the liver, specifically relating to insulin-like growth factor 1 (IGF-1) production, leading to decreased concentration of IGF-1 and limiting IGF-1's ability to provide negative feedback to GH, leading to elevated GH

levels. Transdermal estrogens may or may not provide the same effect as it has been reported to both decrease, increase, and not change IGF-1 concentrations, depending on the study (Weissberger et al., 1989, Bellantoni et al., 1996, Friend et al., 1996, Lieman et al., 2001). However, transdermal estradiol has been shown to decrease insulin-like growth factor binding protein 3 (IGFBP-3) concentrations in older patients (Bellantoni et al., 1996). Regardless of administration route, exogenous estradiol administration reduces LH and FSH concentrations. In addition, estrogens antagonize GH action at a cell-signaling level, interfering with a variety of cytokine receptors (Ho et al., 2023). GH is responsible for inhibiting insulin's suppression of gluconeogenesis while IGF-1 increases insulin's sensitivity (Clemmons, 2004), potentially leading to very impaired gluconeogenesis and therefore reduced blood sugar when estradiol is administered via an oral route, which may not be seen or may be seen to a lesser degree when administered via a parenteral route. Meinhardt and Ho (2006) have identified that oral estradiol administration specifically leads to increased fat mass and decreased lean body mass, showing a 5% change and 3% change respectively when compared with transdermal administration routes. For TGD people seeking feminization, increased fat mass and decreased muscle mass may be seen as preferable, but the other effects of oral administration routes may be sufficient impetus to discourage this route.

Estrogen is responsible for the fusion of bone growth plates (Meinhardt and Ho, 2006) and impacts bone health by increasing osteoblast lifespan and function, while reducing osteocyte apoptosis rate (Khosla et al., 2012). An estrogen deficiency ultimately leads to reduced bone health due to a "gap between bone resorption and bone formation" (Khosla et al., 2012, p. 6). Insulin-like growth factors are involved in coupling osteoclastic bone resorption with osteoblast number and activity (Khosla et al., 2012), so the oral estrogen reduction of hepatic IGF-1 production further

may deleteriously impact bone health. Mo et al. (2015) showed that fracture risk is lower in hypopituitary patients undergoing GH replacement, so the increased GH levels associated with oral administration routes may help oppose this system disruption.

Estrogen receptors are also located in the brain, with sex steroid hormones affecting neurophysiological organization, and behavior in "acute and reversible" ways (Pillerová et al., 2022, p. 2). This is exemplified in the observation that in birds and some other animals, sex steroids can cause regions of the brain to become enlarged, leading to sexually dimorphic behaviors, such as vocalizations, when these regions are activated by continued hormonal activity in adulthood (Cook et al., 1998). This may impact mood and psychological health in TGD individuals receiving exogenous estradiol.

There is a growing body of evidence to suggest that steroid hormones can act in direct ways not involving a cognate receptor. One such interaction is that of estradiol's direct influence on cellular physiology through its polymerization disruption effect on tubulin, a basic component of microtubules, which directly determine cell structure. The disruption of tubulin leads to changes in the cellular distribution and structural integrity of certain organelles, ultimately altering the cells shape and potentially functional capabilities (Joe I et al., 2005). Estrogen has been shown to affect the distribution of GADPH in some cells via altering the movement of GADPH across membranes, specifically increasing the overall concentration of GADPH in the plasma membrane-microsomal fraction of the hippocampus (Joe I et al., 2005). Estrogen also activates serine protein kinases, meaning estrogen plays a direct, non-receptor-mediated role in controlling cell proliferation, differentiation, and apoptosis (Joe I et al., 2005).

Progesterone is known to be a key component of the menstrual cycle and pregnancy, specifically regulating endometrial tissue activities (Nagy et al., 2021). Progesterone receptors are

present in many body tissues outside of the endometrial tissue, including the mammary gland, brain, bone, cardiovascular system, and immune system as well as influencing fat deposition. They are nuclear receptor transcription factors and similarly to estrogen receptors have isoforms which interact with different genes in the presence of progesterone (Azeez, 2021). Progestogens in endometrial tissue stimulate 17β-hydroxysteroid-dehydrogenase (17β-HSD) type two production, upregulating sex steroid inactivation (Bulun et al., 2010), though it is not known if this upregulation is present outside of the endometrial tissue. Very high doses of exogenous progesterone administration (600 mg to 1200 mg doses) have been shown to increase fatigue, decrease vigor, and cause verbal memory recall deficits in a dose dependent manner (Freeman et al., 1992). This effect may be due to the re-conversion of progesterone to pregnanolone and subsequent binding to $GABA_A$ receptors (Kuhl, 2001). Medroxyprogesterone acetate, often prescribed as a component of FHT in outdated regimens, stimulates procoagulatory activity, potentially increasing cardiovascular risk (Herkert et al., 2001). Progesterone does not show the same procoagulatory activity as medroxyprogesterone acetate, and in fact has beneficial effects which medroxyprogesterone acetate lacks, such as protection against glutamate toxicity (Bethea, 2011). Medroxyprogesterone acetate also has weak androgenic properties (Kuhl, 2001), so its administration as a component of FHT is deleterious on multiple fronts.

Androgens have been linked with maintenance of muscular strength, cardiovascular, metabolic, hepatic, immune, and central nervous systems. Androgen receptors can be either a membrane bound secondary messenger system form, or a nuclear receptor form, influencing gene transcription rates. (Hauger et al., 2022). Testosterone has also been shown to have direct effects on cellular structure by stabilizing tubulin microtubule polymerization (Joe I et al., 2005).

Most steroid hormones do not exist freely floating in the bloodstream due to their low solubility in the aqueous blood stream as non-polar compounds, so they must be transported by carrier proteins, such as steroid hormone binding globulin (SHBG). Steroid hormone binding globulin is a glycoprotein produced mostly by the liver (Szybiak et al., 2025). Albumin, the "most abundant protein in human plasma" (Narinx et al., 2022, p. 3), also binds steroid hormones, though with a much lower affinity. For both SHBG and albumin, estradiol has a higher binding affinity than testosterone. Ethinylestradiol however, has no binding affinity to SHBG (Kuhl, 2005), which may in part be due to the ethinyl group's interference with the unusual orientation of which 17β-estradiol binds to SHBG naturally (Grishkovskaya et al., 2002). Oral estradiol has been shown to increase SHBG to a greater degree than the increase due to transdermal administrations (Friend et al., 1996). This increase in SHBG may cause changes to the levels of free hormone in the bloodstream. As measuring free hormone levels is more challenging than measuring total hormone levels (Kushnir et al., 2022), fluctuations in SHBG content and functionality may lead to a discrepancy between hormone efficacy and measured hormone levels.

Birzniece and Ho (2012) explain that oral ethinylestradiol interferes with IFG-1 production to an even greater extent than oral 17-β estradiol and emphasize that its use is not recommended. Evidence of deleterious effects of ethinylestradiol is corroborated by Weisberger et al., (1989) who show that ethinylestradiol also leads to unphysiologically high GH levels in conjunction with the marked decrease in IGF-1 when prescribed as a part of hormone replacement therapy for post-menopausal women. Ethinylestradiol cannot be inactivated by 17β-HSD and in fact can irreversibly inhibit other cytochrome P-450 side chain cleavage enzyme activities, further preventing its metabolism. In conjunction with incredibly high bioactivity, an inability to bind to SHBG, and increased hepatic effects, ethinylestradiol is not recommended (Kuhl, 2005).

The Women's Health Initiative 2002 randomized controlled double-blind versus placebo study, which is most commonly used as evidence against the use of hormone therapies for treating menopause, showed associations between hormone therapies and breast cancer, stroke, and pulmonary embolism (Manson et al., 2024). The Women's Health Initiative study used conjugated equine estrogens and medroxyprogesterone acetate (Rossouw et al., 2002). Endogenously produced 17-β estradiol, which is the 'bioidentical estradiol' used in modern treatments, has been found to have no dose-dependent associations between breast cancer risk and serum total estradiol, free estradiol, SHBG, or ERβ-mediated activity levels (Lim et al., 2014), though ERα-mediated activity was associated with dose-dependent increase in breast cancer risk, with increased risk at higher levels (Lim, et al., 2014). The effects of estrogens on cardiovascular risk appear to be administration route-dependent, with increased thrombin generation associated with oral, but not parenteral estradiol administration (Bagot et al., 2010).

Antiandrogens

In 1989, Dr. Prior and colleagues showed that the addition of the aldosterone inhibitor spironolactone to a regimen based on conjugated equine estrogens, specifically Premarin, and medroxyprogesterone acetate is effective at reducing testosterone concentrations to cisgender women's levels, leading to improved feminization of patients compared to conjugated equine estrogens and medroxyprogesterone acetate alone (Prior et al., 1989). Since then, antiandrogens, medications which either block testosterone action or prevent its synthesis, are often prescribed as a part of FHT. A myriad of antiandrogens are now available, each of which has its own drawbacks and benefits. Some studies suggest that antiandrogens may not be required when paired with parenterally administered bioidentical estradiol (Misakian et al., 2025). Leinung et al. (2018) showed that testosterone concentration decreased by 8.7 ng/dL for each milligram increase in

estradiol dose, and that spironolactone did not have a statistically significant effect on testosterone levels. Findings further emphasize the differences between the older hormone therapy treatments involving conjugated equine estrogens and medroxyprogesterone acetate and modern hormone therapy treatments using bioidentical estradiol and micronized progesterone.

Cyproterone acetate is a dose dependent competitive inhibition antiandrogen with strong progestogen inducing effects, sometimes considered to be a progestin with antiandrogenic activity (Kuhl, 2001) but has been linked to increased rates of meningioma, cancer of the meninges, likely through activation of progesterone receptors (Lee et al., 2022). Despite being recommended by the World Professional Association for Transgender Health, cyproterone acetate is not approved by the United States of America's Food and Drug Administration for medical use (Tollinche et al., 2021). Cyproterone acetate has no binding affinity to SHBG, binding to albumin in high quantities, and it accumulates in fat tissue, complicating pharmacokinetics (Kuhl, 2005).

Spironolactone, the drug which Prior et al. (1989) used to demonstrate the benefit of antiandrogens, is commonly used in the United States of America. Originally used as a diuretic for treating kidney disease, spironolactone is an aldosterone antagonist and a potassium sparing diuretic. Spironolactone use has been shown to correlate to both end stage renal disease and hyperkalemia-associated hospitalization (Yang et al., 2018). These effects may compound with estradiol's effects on the RAAS to provide further complications. Spironolactone is a competitive androgen antagonist (Sica, 2005) and is involved in the destruction of cytochrome P-450 side chain cleavage enzyme in testes and adrenal glands, potentially leading to reduced production of androgens (Menard et al., 1979). Spironolactone use has been shown to reduce the effectiveness of estradiol doses reaching desired serum levels, leading to higher estradiol doses being required to reach the same levels as doses without concomitant spironolactone use (Leinung et al., 2018).

Bicalutamide is an androgen receptor antagonist (Cockshott, 2004) used outside of feminizing hormone therapy for metastatic prostate cancer and for treating androgenic alopecia in women (Perez et al., 2025). Bicalutamide in rare cases has been found to cause liver toxicity (Wilde et al., 2023). Counterproductively, bicalutamide causes an increase in testosterone production in cisgender men, though many of these patients experienced gynecomastia (Cockshott, 2004) which, in the TGD patient, is seen as the beginning of the intended result of breast growth, so may be considered an outcome rather than a side effect in the TGD population.

Used outside of FHT for the treatment of prostate hyperplasia and androgenic alopecia, also known as male pattern baldness, finasteride and dutasteride are effective at reducing the levels of DHT, which is a potent form of testosterone and is responsible for androgenic alopecia, by inhibiting the action of 5α-reductase, which is responsible for the conversion of testosterone to DHT (Steiner, 1996). Finasteride is selective for 5α-reductase type two, while dutasteride inhibits both type one and type two 5α-reductase (Upreti et al., 2014). Similarly to bicalutamide, 5α-reductase inhibitors may increase testosterone concentrations. This is due to the reduction in conversion to DHT, though in contrast to bicalutamide, 5α-reductase inhibitors do not block the action of testosterone, thus neither finasteride nor dutasteride should be used alone for transgender women with testicles for FHT (Leinung et al., 2018).

Leuprolide, triptorelin, and goserelin are GnRH agonists which suppress the HPG axis by providing constant stimulation to the pituitary gland, leading to downregulation of GnRH receptors and desensitization to GnRH, preventing the reception of the pulsatile signals that induce LH and FSH production. This desensitization leads to suppression of gonadotropins after a brief initial increase (Shim et al., 2019). While effective, GnRH agonists are expensive (Vercellini et al., 2023), preventing their use for the majority of TGD patients.

Progesterone

Progesterone administered through oral micronized capsules results in a clear elevation of progesterone concentration (Friess et al., 1997). The enzyme 5α-reductase can also act on progesterone (Upreti et al., 2014), turning it into 5α-dihydroprogesterone, which is the precursor to allopregnanolone, and indeed progesterone is a superior substrate for 5α-reductase when compared to testosterone (Bruchovsky et al., 1988). In mice, high dose progesterone administration was able to reduce 5α-reductase activity in the skin by over 90%, though medroxyprogesterone acetate showed no such inhibitory activity (Cassidenti et al., 1991). Progesterone's capacity to inhibit 5α-reductase activity suggests that the use of finasteride or dutasteride may be less necessary when progesterone is also in circulation.

Progesterone, being further up the synthesis pathway than testosterone, may be converted to testosterone by natural processes. Therefore, some TGD individuals are concerned that an increase in progesterone may lead to an increase in testosterone. This fear is unsubstantiated as there are at least three intermediate compounds and three distinct enzymes between progesterone and testosterone in the synthesis pathway. Additionally, the production of testosterone is controlled by GnRH, LH, and FSH, the main non-steroidal hormones of the hypothalamic pituitary gonadal axis, which, in conjunction with exogenous estradiol of sufficient concentrations, are suppressed, thereby reducing testicular testosterone production. Thus, an increasing concentration of precursors to testosterone would not appreciably increase testosterone concentration.

Non-bioidentical progestins, such as medroxyprogesterone acetate, are associated with an increased risk of breast cancer, with the risk further increasing with duration of use in post-

menopausal women receiving hormone replacement therapy (Vinogradova et al., 2020). Some transgender women believe that using progesterone will help with libido, sleep, and breast growth, and indeed, progesterone has been shown to lead to non-REM sleep changes, such as an increase in stage two non-REM sleep (Friess et al., 1997). A retrospective cohort study using a sample of transgender women from Akron, Ohio, demonstrated that women taking FHT with progesterone as a component were more satisfied with their breast development at both six and nine months and demonstrated a higher rate of improving mental illness severity than those without progesterone as a component, which lends credence to the supposition by some transgender women that progesterone is useful for breast growth (Bahr et al., 2022). Based on preliminary results of a currently ongoing randomized controlled trial, Raya Geels, a PhD candidate at Amsterdam UMC says "Study participants were more satisfied with the size, shape, and growth of their breasts compare to participants who did not use progesterone." (Dreijerink et al., 2025).

Belief in the benefits of progesterone is not universal. Dr. Prior, responsible for pioneering the use of antiandrogens in FHT, is a strong supporter of including progesterone in FHT regimens (Prior, 2019). Dr. Iwamoto critiques Dr. Prior's assertions that adding progesterone to FHT regimens is definitively beneficial, citing the Women's Health Initiative results indicating that the addition of medroxyprogesterone acetate to conjugated equine estrogens for the treatment of menopausal women led to increased rates of invasive breast cancer when compared to conjugated equine estrogens alone (Iwamoto et al., 2019). Dr. Iwamoto suggests that Dr. Prior's claims are "premature and potentially dangerous" (Iwamoto et al., 2019, p. 2). Dr. Prior counters, emphasizing the presence of progesterone in cisgender women's hormonal profiles and the difference between progesterone and medroxyprogesterone acetate (Prior, 2019). Both doctors agree that further research, specifically randomized controlled trials, must be performed before

progesterone can be recommended for use in FHT regimens. Their letters concluded in 2019, prior to the start of the 2025 Amsterdam UMC progesterone randomized control trial.

It is important to recognize the accuracy of Dr. Prior's assertion that progesterone and medroxyprogesterone acetate are different. Medroxyprogesterone acetate, but not progesterone, promotes hyperglycemia and increases the progression of coronary artery atherosclerosis, and medroxyprogesterone acetate does not exhibit the neuroprotective actions caused by progesterone. Hormone therapy regimens of estrogen and medroxyprogesterone acetate increase a variety of known breast cancer proliferation markers, while hormone therapy regimens of estrogen and progesterone only do not (Bethea, 2011). The Women's Health Initiative used a mean age at screening of 63.2 years (Rossouw et al., 2002), and as such the applicability of these results have been called into question for those women starting hormone therapy immediately at the time of menopause (Harman et al., 2005). The Kronos Early Estrogen Prevention Study demonstrated no cardiovascular risk factor effect or negative cognitive effect when transdermal 17β-estradiol and oral progesterone hormone therapy was given to participants with an average of 52 years of age and 1.5 years from last menstrual period (Miller et al., 2019).

Current data on regimen use

In 2016, Fisher et al. reported that in their cohort of transgender women, 44% were using oral estradiol valerate, 26.4% were using oral ethinylestradiol, 28% were using transdermal estradiol hemihydrate, 19.2% were using estradiol gel, 3.2% were using oral finasteride, 4% were using oral dutasteride, 78.4% were using oral cyproterone acetate, and 1.6% were using oral spironolactone. This cohort's use of nearly exclusively oral administrations of estradiol, including a significant number of participants using ethinylestradiol, is concerning due to the associations between oral estradiol and ethinylestradiol and increased cardiovascular risk. Regardless of the

risks associated with the seemingly popular FHT regimen in the Fisher cohort, which was based in Italy, Fisher et al., demonstrated that significant reduction in body uneasiness, body avoidance, and depersonalization, as well as BMI and waist dimensions correlate with length of time using FHT.

In 2021, de Blok et al. showed that though the mean increase in breast-chest difference stabilized after under a year of hormone treatment, breast volume continued to increase, suggesting a 'filling out' of the breasts over time. Additionally, de Blok et al. further emphasized that BMI and tobacco use showed no association with breast volume. Most trans women (58%) are satisfied with their breasts, though most (71%) have less than A cups after 26 months (de Blok et al., 2021). This is of note as among the broader population of women, only 23.4% of women had no breast size dissatisfaction (Swami et al., 2015). The breast growth seen by TGD people using FHT was negatively associated with body uneasiness and other factors, reinforcing that breast development due to FHT is beneficial to TGD people's mental health (Fisher et al., 2016). Most importantly, de Blok et al., show that there was no association between breast volume and treatment regimen (oral vs transdermal) or serum hormone levels (<200 pmol/L, 200-400 pmol/L, >400 pmol/L), which Klaver et al. (2018) corroborate, showing that higher serum levels do not appear to result in larger changes. In 2018, however, Glick et al. showed that transdermal estradiol regimens showed faster breast growth during early months, with this difference leveling out after one year (Glick et al., 2018).

Those TGD people taking FHT with the least changes in body fat composition in the first three months using FHT continue to be in the lowest quartile for change as time progresses, showing somewhat linear patterns of relative body fat percentage changes, with changes continuing even after two years (van Velzen et al., 2020). The lipogenic effects of estradiol may

be less effective in individuals who already have a surplus of body fat prior to beginning FHT (van Velzen et al., 2020), with those having a BMI under 20 seeing larger changes in body fat and lean body mass, though a higher starting BMI does tend to result in a larger decrease in lean body mass over time (Klaver et al., 2018). Body mass index has a small influence on estradiol levels (Leinung et al., 2018), possibly due to higher concentrations of aromatase, which is produced in adipose tissue.

Increased weight is associated with increased hip bone mineral density (Aedo et al., 2020), and overall fracture incidence was not increased in transgender women (Wiepjes et al., 2020). Age and T score of lumbar spine is associated with fracture risk, as is smoking (Wiepjes et al., 2020), which contributed to an increase in interest into nicotine use in the TGD population. There does not seem to be any correlation between estradiol, testosterone, or LH concentrations and fracture risk, though transgender women with higher estradiol concentrations (mean 443 pmol/L) showed an increase in lumbar spine bone mineral density and those with lower (118 pmol/L) concentrations showed a decrease (Wiepjes et al., 2020). The increase in bone mineral density associated with higher estradiol concentrations provides a counter to de Blok et al., and Klaver et al.'s findings that higher serum concentrations do not result in larger transition related changes – higher concentrations may not cause improved visible transition, but bone health may be increased with higher doses. Interestingly, transgender women had a comparatively low mean lumbar spine z-score, a measure of bone density compared to peers, even prior to the start of hormone therapy, possibly due to lifestyle choices of this group (Wiepjes et al., 2019).

Despite physiological inability for complete hair follicle regression after a testosterone driven puberty, intensity of hirsutism can decrease as a result of FHT use, with participants in the Fisher cohort experiencing a reduction in Ferriman-Gallway score, a measure of hirsutism, from

baseline after FHT use (Fisher et al., 2016). Hair distribution changes did not seem to significantly affect TGD people's body uneasiness (Fisher et al., 2016).

Do it yourself FHT

Do it yourself FHT is not uncommon among TGD people, with 26.8% of participants having some experience with DIY hormones (Rotondi et al., 2013). Those TGD people using DIY FHT receive less physical monitoring than those using prescription sources (Mepham et al., 2014). The internet is the most common source of DIY hormones, at 70% of hormones being sourced via the internet (Mepham et al., 2014). To learn about DIY hormones and how to go about using them, participants report educating themselves through discussions with friends, reading online sources, and self-experimentation (Glick et al., 2018). Glick et al. also indicated that 'punk' groups may be more likely to use DIY FHT due to a DIY ethic prominent in these groups. Among these punk groups, providers of FHT were often friends. The availability of DIY FHT resources and education through friends suggests that in these circles, 'social capital' may replace, or fill in the gaps of, formalized healthcare institutions (Glick et al., 2018).

Psychiatric medications and nicotine

Transgender and gender diverse people, due to higher rates of minority stress, may be afflicted with depression, anxiety, and other psychiatric conditions at a higher rate. The use of psychiatric medications has not been shown to influence FHT efficacy (Klaver et a., 2018). The use of nicotine, which is associated with minority stress (Mann et al., 2022) and may increase cardiovascular risks (Dorotheo et al., 2024), has not been shown to have an association with breast volume (de Blok et al., 2021). In Belgium, more transgender participants report smoking than the general Belgium population (Wierckx et al., 2012), leading to increased interest in the effect, if any, of nicotine use on the efficacy of FHT. Change in depressive symptoms do not reach statistical

significance when comparing the use of FHT with those TGD individuals not using FHT, though the use of FHT does significantly reduce body uneasiness and subjective gender dysphoria (Fisher et al., 2016).

Adolescents and the elderly

Transgender and gender diverse people may come to understand their identity and realize a desire to transition at any point in their lives. Besides more common reasons such as personal growth and discovery, elderly people may choose to transition late in life due to identity crisis caused by the recognition of impending death, and natural hormonal changes associated with aging (Ettner 2013). Changes in fat percentages associated with the use of FHT has not been shown to be associated with age at start (Klaver et al., 2018, van Velzen et al., 2020). Bone health may be important to consider in the transition of older individuals, and indeed transgender women older than 50 years have an equal fracture risk when compared with age matched cisgender women, while when they are younger than 50 years, have fracture risks more closely related to that of cisgender men (Wiepjes et al., 2020).

Transgender and gender diverse people who discover their identity at a young age, specifically those under the age of majority, are under increased scrutiny. The World Profession Association for Transgender Health recommends that for minors, changing the use of names and pronouns used, as well as permitting youth access to clothing and accessories of their gender identity is paramount to ensuring health and happiness. For those individuals who seek medical transition as minors, the World Profession Association for Transgender Health suggests the use of caution, recommending that the decision of which puberty to undergo should be postponed until the child is certain. To this end, the use of puberty blockers, such as GnRH agonists, is vital for the gender questioning child, so as to allow full, free, and competent choice. Using GnRH agonists, a

child can prevent their body from undergoing either puberty, which will prevent lasting damage in either direction, regardless of whether or not their current identity remains constant. In adolescents using GnRH agonists, height, weight, and BMI significantly increased during the first year of treatment in both individuals AMAB and AFAB (Schagen et al., 2016). Breast Tanner stage among those who have already begun developing breast tissue may slightly decrease, and in adolescents AFAB who have experienced menarch, menses ceases (Schagen et al., 2016). In individuals AMAB, testicular volume decreases (Schagen et al., 2016). Gonadotropin and sex hormone concentrations decreased within three months, remaining constant after decreasing (Schagen et al., 2016). No renal or hepatic complications occurred, and during the course of Schagen et al.'s study, no adolescents discontinued GnRH agonist use due to side effects.

CHAPTER 2

STATEMENT OF PURPOSE

Transgender and gender diverse people are a minority, making up an estimated 1.0% of individuals older than 13 years of age in the United States, according to the Williams Institute. Of that percentage, 32.7% are transfeminine, meaning they seek to move towards a more feminine gender presentation, and of those individuals less than half pursue feminizing hormone therapies. Those who do pursue hormone treatments as a part of their transition ideally would have access to a specialized reproductive endocrinologist. However, such specialists are typically not available outside of large metropolitan areas. In addition, financial considerations can prohibit specialist care. Financial pressures are exacerbated by the pressures levied by insurance companies seeking to minimize costs by requiring multiple disparate healthcare professional recommendations before covering specialists or denying feminizing coverage altogether, and by a systemic disparity between the professional capability of transgender and gender diverse people and their level of employment. These factors lead to high percentages of this patient group seeking care from their primary care providers rather than endocrinology specialists.

Generally, the aim of feminizing hormone therapy is to stop and reverse virilization while inducing feminization. Feminizing hormone therapy broadly includes the utilization of estrogens to promote feminization, the use of antiandrogens to stop and/or reverse virilization, and utilizing progestins, which have been shown to be associated with an increase in patient satisfaction with breast growth. Though the World Professional Association for Transgender Health provides loose guidelines for feminizing hormone therapy administration, finding information about the specifics

on the effectiveness and safety of using different potential combinations of estrogen, antiandrogen and progestin regimens as well as ascertaining the ideal dosage and route of administration of these drugs is challenging. Primary care providers and healthcare professionals without an extensive background in reproductive endocrinology feel underqualified to prescribe feminizing hormone therapy regimens, driving transgender and gender diverse people pursuing feminizing hormone therapy not towards those more qualified healthcare professionals, but towards unsafe "do it yourself" feminizing hormone therapy administration by sourcing sex steroids from the internet and following the recommendations of their friends and the internet for advice regarding their feminizing hormone therapy. Therefore the goal of this research is a) to identify the combinations of estrogens, antiandrogens and progestins currently utilized by transgender and gender diverse people using feminizing hormone therapy, and b) to determine if the identified feminizing hormone therapy regimens promote different results and perceived patient satisfaction.

CHAPTER 3

MATERIALS AND METHODS

Using Qualtrics software (Qualtrics LLC, Provo, UT), a 96-question survey was constructed to ascertain information about FHT regimens utilized by transgender women. The survey was composed of three broad sections: consent and eligibility, hormone regimens, and the associated outcomes and satisfaction with the hormone regimens. The survey content and administration procedures were approved by the University of Georgia's Institutional Review Board (PROJECT 0001010679).

The survey link was distributed to four online chat groups (oSTEM UGA, Berry Bush, Anna's Gaggle of Bitches and Sluts, and Atlanta Subby School) that had been identified by transgender contacts as having a potentially significant proportion of their members currently utilizing FHT. Participants in these chat groups were allowed to send the survey link to other online chat groups to increase the distribution of the survey to transgender women. The survey link was distributed to these online chat groups on April 29, 2025, and the window to complete the survey ended 100 days later on July 10, 2025.

The consent and eligibility section of the survey (Table 3.1) required participants to give their age so that minors could be excluded from further participation in the survey to comply with University of Georgia policies. Following indication that the participants were adults, participants were presented with a consent form describing the purpose for the survey and the type of information that would be collected. Upon consenting, participants were asked if they were undergoing FHT.

Table 3.1. Feminizing hormone therapy regimen survey eligibility, consent and medication questions.

How old are you? o Under 18 o 18-24 years old o 25-34 years old o 35-44 years old o 45-54 years old o 55-64 years old o 65+ years old If under 18, for legal reasons we are unable to collect data from minors. Thank you for your time taking this survey.
Consent UNIVERSITY OF GEORGIA CONSENT LETTER COMPARISON OF FEMINIZING HORMONE THERAPY (FHT) REGIMENS. You are being asked to take part in a research study studying feminizing hormone therapy (FHT) regimens. The information in this form will help you decide if you want to be in the study. Please ask the researcher(s) below if there is anything that is not clear or if you need more information. Principal Investigator: Adam Davis ajdavis@uga.edu or graduate student Sara-Belle Ozburn jao20325@uga.edu. We are conducting a survey to try to determine if certain FHT regimens promote different results compared to other regimens. In addition, we want to learn if one FHT regimen has greater patient-perceived satisfactory effects when compared to other FHT regimens. We are looking for adult transgender and gender diverse (TGD) people taking FHT to participate in this survey. Unfortunately, we are unable to accept minors in this study. If you agree to take part in this study, you will be asked to complete this survey through Qualtrics. The survey should take between 10 and 15 minutes. You will be asked to answer questions regarding the dosages of your medications, and your perceptions of your body and mental state. These questions may make you uncomfortable, and you can skip these questions if you do not wish to answer them. Participation is voluntary. You can refuse to take part or stop at any time without penalty. Your decision to take or not take this survey will not affect your access to your hormone therapies. If you are not out to your family or friends and they see you taking this survey, they may be able to understand that you are taking FHT. This could harm your relationships with them and put you at risk of reprisal. If you are concerned about this possibility, it may be wise to take this survey in an isolated area. Your responses may help us understand that certain medications are critical to a successful FHT regimen or determine that certain medications are not necessary for a quality FHT regimen. This could improve the mental and physical state of you and your TGD peers as well as potentially save you money and time. We will not be collecting any personal identifiers, such as your name, DOB, or address. Qualtrics will collect your IP address and store it so that your input is not recorded twice, but we will not have access to this data. Information collected through this survey may be used for further analysis past our initial research question of determining optimal FHT regimen. If you have questions about this research, please feel free to contact the graduate student at jao20325@uga.edu or the principal investigator at ajdavis@uga.edu. If you have any complaints or questions about your rights as a research volunteer, contact the IRB at 706-542-3199 or by email at IRB@uga.edu. If you consent to participate in this research, please click the consent button below. I consent and would like to take part in this survey. o Yes o No If answer is no, survey ends.
Are you taking feminizing hormone therapy (FHT)? o Yes o No

Do you have testicles?
o Yes
o No, but did at one point
o No, and never have

How long after the onset of taking FHT were your testes removed?
☐ Less than 6 months
☐ 1 year to < 2 years
☐ 2 years to < 5years
☐ 5 years or more
☐ Removed prior to starting FHT

Select the medications you are taking:
☐ Bicalutamide
☐ Cyproterone Acetate
☐ Estrogen
☐ Finasteride
☐ Progesterone
☐ Spironolactone
☐ Other (Please describe and include dosage)
☐ ⊗I am not taking any medications

If no medications being taken, the respondent moves to the final demographic question of the survey.

Are you taking medications of any of the following types?
☐ Antidepressant
☐ Immunosuppressant
☐ Mood stabilizer
☐ Nutritional supplement
☐ Antianxiety
☐ Antipsychotic

Do you use nicotine?
o Yes
o No

Do you get any of your FHT medications through non-prescription sources (DIY)? There will be no repercussions for answering yes.
o Yes
o No

If participants were eligible, consented, and were taking feminizing hormone therapy, they proceeded to a few general questions that could impact their FHT regimen (Table 3.1). Additionally, participants were asked to select the medications they were taking from a provided list and to include any others they were taking in an available text box (Table 3.1). The drug options included in the list were bicalutamide, cyproterone acetate, estrogen, finasteride, leuprolide, progesterone, and spironolactone. This list is far from exhaustive, and other FHT medications exist, but these seven are among the most commonly used. Lastly, participants were asked to indicate if they were getting any of their FHT medications through non-prescription sources (DIY).

Based on what participants selected from the list of seven commonly used FHT medications, the survey displayed subsequent questions to ascertain administration routes, dosage and duration of the administration of any estrogens (Table 3.2) antiandrogens (Table 3.3) and progestins (Table 3.4) they were taking. Thus, the 96-question survey became much shorter for most participants as they would not be taking all the listed drugs.

Following completion of the medication questions, participants were asked to indicate how frequently they get their blood hormone levels checked, and whether their blood hormone concentrations were within the range for their gender (Table 3.5). Finally, participants were asked how often they miss or postpone a dose of any of their medications (Table 3.5).

Recognizing the survey was quite long, before moving forward with body changes associated with FHT and participants satisfaction level with these changes, a brief message of encouragement was provided emphasizing the potential importance of the collected information in improving FHT for future users. In addition, participants that already had completed gender confirmation surgery were told that they should answer questions related to erection volume and ejaculatory volume as they would have immediately prior to their surgery.

Table 3.2. If estrogen was selected as hormone taken for feminizing hormone therapy the following questions were asked.

How long have you been taking estrogen? o Less than 3 months o 3 to < 6 months o 6 months to < 1 year o 1 year to < 5 years o 5 years to < 10 years o 10 or more years
What method of administration are you using for your estrogen? o Gel o Implanted capsule o Intramuscular injections o Oral o Patch o Subcutaneous injections o Sublingual o Suppository o Other (Please describe)
How frequently are you administering your estrogen? o More frequently than twice a day o Twice a day o Once a day o Once a week o Every other week o Once a month o Every three or more months o Other, please describe
<u>If implanted capsule was selected</u> How frequently are you replacing your estrogen capsule? o Every month to < 2 months o Every 2 months to < 4 months o Every 4 months to < 6 months o Every 6 months to < 8 months o Every 8 months to < a year o Every year to every 2 years o Less frequently than every 2 years o Other In what dosage are you taking your estrogen? o Less than 25 mg o 25 mg o 50 mg o 75 mg o 100 mg o 200 mg o 200 mg or more o I do not know
<u>If Intramuscular or subcutaneous injection is selected for method of administration</u> What concentration and type is your estrogen injection?

o 100 mg/5mL Estradiol Valerate
o 200 mg/5mL Estradiol Valerate
o 5 mg/mL Estradiol Cypionate
o I do not know
o Other

<u>If 100 mg/5mL Estradiol Valerate or 200 mg/5mL Estradiol Valerate was selected</u>
In what dosage are you taking your estrogen? (Choose closest option)
o < than 0.05 mL
o 0.05 mL to < 0.1 mL
o 0.1 mL to < 0.2 mL
o 0.2 mL to < 0.5 mL
o 0.5 mL to < 1 mL
o 1 mL to < 2 mL
o 2 mL or more
o Do not know

<u>If 5 mg/mL Estradiol Cypionate was selected</u>
In what dosage are you taking your estrogen? (Choose closest option)
o 1 mL
o 2 mL
o 3 mL
o 4 mL
o 5 mL or more
o Do not know

<u>If oral or sublingual was selected for method of administration</u>
In what dosage are you taking your estrogen?
o Smaller than 1 mg
o 1 mg < 2 mg
o 2 mg to < 4 mg
o 4 mg to < 6 mg
o 6 mg to < 8 mg
o 8 mg to < 10 mg
o 10 mg < 12 mg
o 12 mg or more
o Do not know

<u>If patch was selected for method of administration</u>
In what dosage are you taking your estrogen?
o Less than 25 µg patch
o 25 µg to < 50 µg patch
o 50 µg to < 100 µg patch
o 100 µg to < 200 µg patch
o 200 µg to < 300 µg patch
o 300 µg to < 400 µg patch
o 400 µg patch or more
o Do not know

If gel was selected for method of administration

In what dosage are you taking your estrogen?

- o Less than 0.1 mg
- o 0.1 mg to < 0.5 mg
- o 0.5 mg to < 1 mg
- o 1 mg to < 2 mg
- o 2 mg to < 4 mg
- o 4 mg to < 6 mg
- o 6 mg or more
- o Do not know

Table 3.3. Questions pertaining to antiandrogen drugs taken and their doses and administration route.

<u>If spironolactone was selected</u> How long have you been taking spironolactone? o < than 3 months o 3 months to < 6 months o 6 months to < 1 year o 1 year to < 5 years o 5 years to < 10 years o 10 years or more What method of administration are you using for your spironolactone? o Oral o Suppository o Other, please describe How frequently are you administering your spironolactone? o More frequently than every day o Every day o Every other day o Every week o Less frequently than every other week o Other, please describe In what dosages are you taking your spironolactone? o Less than 25 mg o 25 mg to < 50 mg o 25 mg to < 50 mg o 50 mg to < 100 mg o 100 mg to < 200 mg o 200 mg to < 300 mg o 300 mg to < 400 mg o 400 mg or more o I do not know
<u>If cyproterone acetate was selected</u> How long have you been taking cyproterone acetate? o Less than 3 months o 3 to < 6 months o 6 months to < 1 year o 1 year to < 5 years o 5 years to < 10 years o 10 years or more What method of administration are you using for your cyproterone acetate? o Intramuscular injections o Oral o Suppository o Other, please describe <u>If Intramuscular injection selected as the method of administration</u>

How frequently are you administering your cyproterone acetate?
- o More frequently than every day
- o Every day
- o Every other day
- o Every week
- o Less frequently than every week
- o Other, please describe

How frequently are you administering your cyproterone acetate?
- o More frequently than every two weeks
- o Every two weeks
- o Every month
- o Every two months
- o Less frequently than every two months
- o Other, please describe

In what dosages are you taking your cyproterone acetate?
- o Less than 5 mg
- o 5 mg to < 10 mg
- o 10 mg to < 25 mg
- o 25 mg to < 50 mg
- o 50 mg to < 75 mg
- o 75 mg to < 100 mg
- o 100 mg or more
- o Do not know

In what dosages are you taking your cyproterone acetate?
- o Less than 100 mg
- o 100 mg to < 200 mg
- o 200 mg to < 300 mg
- o 300 mg to < 400 mg
- o 400 mg or more
- o Do not know

<u>If bicalutamide was selected</u>

How long have you been taking bicalutamide?
- o Less than 3 months
- o 3 to less than 6 months
- o 6 months to < 1 year
- o 1 year to < 5 years
- o 5 years to < 10 years
- o 10 years or more

What method of administration are you using for your bicalutamide?
- o Intramuscular injections
- o Oral
- o Suppository
- o Other, please describe

How frequently are you administering your bicalutamide?
- o More frequently than every day
- o Every day

o Every other day
o Every week
o Less frequently than every week
o Other, please describe

In what dosages are you taking your bicalutamide?
o Less than 25 mg
o 25 mg to < 50 mg
o 50 mg or more
o Do not know

If leuprolide selected

How long have you been taking leuprolide?
o Less than 3 months
o 3 to < 6 months
o 6 months to < 1 year
o 1 year to < 5 years
o 5 years to < 10 years
o 10 years or more

What method of administration are you using for your leuprolide?
o Intramuscular injections
o Other, please describe

How frequently are you administering your leuprolide?
o More frequently than every two weeks
o Every two weeks
o Monthly
o Every two months
o Less frequently than every two months
o Other, please describe

In what dosages are you taking your leuprolide?
o Less than 3 mg
o 3 mg to < 10 mg
o 10 mg to < 15 mg
o 15 mg or more
o Do not know

If finasteride was selected

How long have you been taking finasteride?
o Less than 3 months
o 3 to < 6 months
o 6 months to < 1 year
o 1 year to < 5 years
o 5 years to < 10 years
o 10 years or more

What method of administration are you using for your finasteride?
o Oral
o Suppository
o Other please describe

How frequently are you administering your finasteride?

- o More frequently than every day
- o Every day
- o Every other day
- o Every week
- o Less frequently than every week
- o Other, please describe

In what dosages are you taking your finasteride?

- o Less than 1 mg
- o 1 mg to < 2 mg
- o 2 mg to < 4 mg
- o 4 mg to < 6 mg
- o 6 mg or more
- o Do not know

Table 3.4. If progesterone was selected as hormone taken for feminizing hormone therapy the following questions were asked.

How long have you been taking progesterone? o Less than 3 months o 3 to < 6 months o 6 months to < 1 year o 1 year to < 5 years o 5 years to < 10 years o 10 years or more
What method of administration are you using for your progesterone? o Oral o Suppository o Other (Describe)
How frequently are you administering your progesterone? o More frequently than every day o Every day o Every other day o Every week o Less frequently than every week o Other, please describe
<u>If oral was selected as the method of administration</u> In what dosages are you taking your progesterone? o Less than 25 mg o 25 mg to < 50 mg o 50 mg to < 100 mg o 100 mg to < 200 mg o 200 to < 300 mg o 300 to < 400 mg o 400 mg or more o Do not know

Table 3.5 Testing and fidelity questions.

How often do you have your blood hormone levels checked? o More frequently than every 3 months o Between every 3 months and less than every 6 months o Between every 6 months and less than every 9 months o Between every 9 months and less than every year o Between every year and less than every 2 years o Less frequently than every 2 years o Never
At your last hormone level check, were your values considered within range for your gender(s)? o Yes o No o Do not know o Not applicable
How often do you miss or postpone a dose of any of your medications? o Nearly every time o Often o Sometimes o Rarely o Never

To start the next section of the survey, participants were asked to select from a list of potential body changes that they had experienced because of FHT (Table 3.6). For each body change selected subsequent questions investigated the nature and the satisfaction level with the changes, including body hair (Table 3.7), breast growth, (Table 3.8), muscle mass (Table 3.9), fat redistribution (Table 3.10), erection frequency, erection volume, ejaculate volume and libido levels (Table 3.11), facial hair (Table 3.12), skin characteristics (Table 3.13), and sleep and energy level (Table 3.14).

To conclude the survey, all participants who had undergone FHT were asked about side effects (Table 3.15) that they had experienced. In addition, the final question asked each participant to classify their general ethnicity (Table 3.16).

Statistics

General descriptive statistics (percent of participants) were completed for all appropriate questions, and were applicable to differences between demographic groups such as between participants using prescription versus DIY drug sources or between participants with testes verses those that had undergone gender confirmation surgery. Chi square, Fisher's Exact, Cochran-Mantel-Haenszel, or nominal logistic analyses were completed using the JMP statistical software package (JMP Student Edition 19; Cary, NC). Differences were considered statistically significant when $P < 0.05$.

Table 3.6. Potential body change associated with feminizing hormone therapy (FHT)[1].

What changes have you experienced as a result of your FHT?
☐ Body hair changes
☐ Breast growth
☐ Muscle mass changes
☐ Ejaculate volume changes
☐ Erection frequency changes
☐ Fat redistribution
☐ Facial hair changes
☐ Libido changes
☐ Maximum erectile volume changes
☐ Skin texture changes
☐ Sleep and energy level changes
☐ Other (list, separated by a comma)

[1]Note participants were told if questions regarding penis and ejaculatory changes do not apply due to gender confirmation surgery to please answer those questions as they would have immediately prior to surgery.

Table 3.7 If body hair changes was selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

How has the amount of body hair changes as a result of FHT? o Decreased by half or more o Decreased slightly o No change o Increased slightly o Doubled or more than doubled
How has the texture of your body hair changed as a result of FHT? o Much more coarse/thick o Slightly coarser/thicker o No change o Slightly softer/thinner o Much softer/thinner
How satisfied are you with the changes to your amount of body hair so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied
How satisfied are you with your body hair texture changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.8. If breast growth was selected due to feminizing hormone therapy (FHT), the following question populated the survey.

How satisfied are you with your breast growth so far?
o Satisfied
o Somewhat satisfied
o Neither satisfied nor unsatisfied
o Somewhat unsatisfied
o Unsatisfied

Table 3.9. If muscle mass change was selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

How has your upper body muscle mass changed so far as a result of FHT? o Much more muscular o Slightly more muscular o No change o Slightly less muscular o Much less muscular
How has your lower body muscle mass changed so far as a result of FHT? o Much more muscular o Slightly more muscular o No change o Slightly less muscular o Much less muscular
How satisfied are you with your muscle mass changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.10. If changes in body fat redistribution was selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

In what regions have you experienced changes in fat quantity or shape as a result of FHT? ▢ Belly ▢ Hips and buttocks ▢ Face and neck ▢ Arms and chest
How has the amount of fat on your belly changed as a result of FHT? o Increased o About the same o Decreased
How has your belly fat distribution changed as a result of FHT? o Become more feminine o About the same o Become more masculine o Changed shape, but appears neither more feminine nor more masculine
How has the amount of fat on your hips and buttocks changed as a result of FHT? o Increased o About the same o Decreased
How has your hip and buttocks fat distribution changed as a result of FHT? o Become more feminine o About the same o Become more masculine o Changed shape, but appears neither more feminine nor more masculine
How has the amount of fat on your face and neck changed as a result of FHT? o Increased o About the same o Decreased
How has your face and neck fat distribution changed as a result of FHT? o Become more feminine o About the same o Become more masculine o Changed shape, but appears neither more feminine nor more masculine
How has the amount of fat on your arms and chest changed as a result of FHT? o Increased o About the same o Decreased
How has your arm and chest fat distribution changed as a result of FHT? o Become more feminine o About the same o Become more masculine o Changed shape, but appears neither more feminine nor more masculine
How satisfied are you with your fat redistribution so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.11. If changes in ejaculate volume, erection frequency, erectile volume and libido were selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

How has your ejaculate volume changed so far as a result of FHT? o Dropped to zero o Dropped significantly, to near zero o Been reduced o No change o Has increased o Greatly increased
How satisfied are you with your ejaculate volume changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied
How has your erection frequency changed so far as a result of FHT? o Dropped to zero o Decreased o No change o Increased o Greatly increased
How satisfied are you with your erection frequency changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat satisfied o Unsatisfied
How has your maximum erectile volume changed so far as a result of FHT? o Volume has increased o Volume has not changed o Volume has decreased
How satisfied are you with your maximum erectile volume changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied
How has your libido changed so far as a result of FHT? ▢ Has increased -- I desire intimacy more frequently ▢ Has decreased -- I desire intimacy less frequently ▢ Has not changed -- I desire intimacy the same amount ▢ Has shifted -- I desire intimacy at different times or in different ways than previously
How satisfied are you with your libido changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.12. If body facial hair changes were selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

How has your facial hair frequency changed as a result of FHT? o Doubled or more than doubled o Increased some o No change o Decreased some o Halved or more than halved
How has your facial hair texture changed as a result of FHT? o Much thicker/more coarse o Slightly thicker/more coarse o No change o Slightly thinner/softer o Much thinner/softer
How satisfied are you with your facial hair changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.13. If changes in skin were selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

How has your skin oil changed so far as a result of FHT? o Become much more oily o Become somewhat more oily o No change o Become somewhat less oily o Become much less oily
How has your skin texture changed so far as a result of FHT? o Become much softer o Become somewhat softer o No change o Become somewhat rougher o Become much rougher
How do you feel about your skin changes so far? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.14. If changes in sleep or energy levels were selected due to feminizing hormone therapy (FHT) the following questions populated the survey.

How has the amount of sleep you are getting changed since starting FHT? o Sleeping more o Sleeping the same amount o Sleeping less than before
How has the quality of your sleep changed so far as a result of FHT? o Has become better o No change o Has become worse
How has your overall energy level changed so far as a result of FHT? o More energized o No change o Less energized
How do you feel about the changes to the amount of sleep you have been getting? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied
How do you feel about the changes to the quality of sleep you have been getting? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied
How do you feel about the changes to your energy levels? o Satisfied o Somewhat satisfied o Neither satisfied nor unsatisfied o Somewhat unsatisfied o Unsatisfied

Table 3.15. Questions on potential side effects experienced by participants as a result of feminizing hormone therapy (FHT).

Have you ever had a blood clot which required medical attention after beginning taking FHT? o Yes o No
Have you had a stroke after beginning taking FHT? o Yes o No
Have you had a heart attack after beginning taking FHT? o Yes o No
Have you noticed disruptive mood changes after beginning taking FHT? o Yes o No
Have you had abdominal cramping after beginning taking FHT o No o Yes
Are there any other negative side effects of note you have noticed after beginning taking FHT? o No o Yes (please describe)

Table 3.16. Race demographic classification selection by survey participants.

Choose one or more races that you consider yourself to be
☐ White or Caucasian
☐ Black or African American
☐ American Indian/Native American or Alaska Native
☐ Asian
☐ Native Hawaiian or Other Pacific Islander
☐ Hispanic or Latino
☐ Other (list)
☐ Prefer not to say

CHAPTER 4

RESULTS

Demographics

A total of 175 people began the survey. Of this number, 16 were excluded for not taking FHT, 16 did not consent to take the survey after reading the consent form, and one was excluded for being a minor. In addition, two left the survey after being asked if they currently had testicles, nine left during sections asking about their current medication use, and five left during sections asking about the specifics on body changes resulting from FHT. Thus, 126 participants completed the survey, which brought the completion rate to 72%. Although data from these 126 participants were used for demographic information and the basic FHT information, 18 of the 126 participants did not know at least one piece of information such as hormone dosage and or administration route for their FHT regimen and thus were excluded from the analysis comparing FHT regimens and participant's satisfaction with their regimen. The participants who knew all their information regarding their FHT regimen were classified as "confident" participants, while the 126 who completed the survey were classified as "eligible" participants.

Participants that completed the survey were overwhelmingly Caucasian (Table 4.1), young (Table 4.2) and did not use nicotine products (Table 4.3). A total of 26 individuals received at least one of their medications through a non-prescription source (Table 4.4) and these individuals were classified as "do it yourself" (DIY) FHT participants. Of the eligible participants, 19% indicated they did not currently have testicles but did at one point (Table 4.5).

Table 4.1. Ethnic demographics of 126 eligible[1] participants and 108 confident[2] participants.

Group	Eligible participants		Confident participants	
Ethnicity	n	%	n	%
American Indian/Native American or Alaska Native	3	2	3	3
Asian	7	6	7	6
Black or African American	4	3	3	3
Hispanic or Latino	8	6	7	6
Middle Eastern	1	1	1	1
Native Hawaiian or Other Pacific Islander	1	1	0	0
White or Caucasian	109	87	93	85
Prefer not to say	3	2	3	3

[1]Eligible participants are those who were taking hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]Some participants selected multiple ethnicities, so the results do not add to 126 and 108 respectively.

Table 4.2. Age demographics of 126 eligible[1] participants and 108 confident[2] participants.

Group	Eligible participants		Confident participants	
Age (years)	n	%	n	%
18-24	47	37	44	40
25-34	58	46	46	42
35-44	14	11	12	11
45-54	2	2	1	1
55-64	3	2	3	3
65+	2	2	2	2

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.

Table 4.3. Nicotine use among the 126 eligible[1] participants and the 108 confident[2] participants.

Group	Eligible participants		Confident participants	
Uses nicotine	n	%	n	%
Yes	17	13	14	13
No	109	87	94	87

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.

Table 4.4. Non-prescription, or "Do It Yourself" (DIY) feminizing hormone therapy (FHT) medication use among the 126 eligible[1] participants and the 108 confident[2] participants.

Group	Eligible participants		Confident participants	
Medication source	n	%	n	%
Some medications through non-prescription sources	26	21	19	18
All medications through prescription sources	100	79	89	82

[1]Eligible participants are those who were taking FHT, consented to the survey, were not minors, and completed the entire survey.

[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.

Most of the participants that had their testicles removed did so two to five years after starting FHT (Table 4.5) and were all less than 55 years of age (Table 4.6). Twenty six percent of the 19 confident participants who had their testicles removed were DIY FHT users (Table 4.7).

Regimens

All but one of the eligible survey participants were taking estrogens as part of their FHT (Table 4.8). Over half of the eligible and confident survey participants were utilizing antiandrogens as part of their FHT and a variety of antiandrogen drugs were being utilized (Table 4.8). The duration of use, administration route, frequency of administration, chemical form, and dose are provided for the antiandrogens (Table 4.9), estrogens (Table 4.10) and progestins (Table 4.11). Participants using FHT for less than one year were more likely ($P = 0.0219$) to use oral or sublingual administration of estradiol over subcutaneous or intramuscular injections of estradiol than those having used FHT drugs for greater than one year.

Seven FHT regimens were identified in the 108 confident survey participants and included estrogen only, antiandrogen only, estrogen plus progesterone, estrogen plus antiandrogen, estrogen plus testosterone, estrogen plus testosterone and antiandrogen, and estrogen plus progesterone, antiandrogen, and testosterone (Table 4.12). Three of the regimens, antiandrogen only, estrogen plus testosterone, and estrogen plus progesterone, antiandrogen, and testosterone only had one participant in them (Table 4.12). Given that the antiandrogens are a diverse group of drugs with different modes of action to reduce androgen concentrations, the regimens containing antiandrogens were subcategorized to include the specific antiandrogen utilized (Table 4.12). However, for subsequent analyses all the androgens were grouped together as one.

Table 4.5. Presence of testicles of the 126 eligible[1] participants and the 108 confident[2] participants.

Group	Eligible participants			Confident participants		
Do you have testicles?	n	%		n	%	
Yes	102	81		89	82	
No, but did at one point	24	19		19	18	
How long after the onset of FHT were your testicles removed?	Time	n	%[3]	Time	*n*	%[4]
	Removed prior to starting FHT	1	4	Removed prior to starting FHT	0	0
	< 6 months	1	4	< 6 months	0	0
	6 months to < 1 year	0	0	6 months to < 1 year	0	0
	1 year to < 2 years	3	13	1 year to < 2 years	3	16
	2 years to < 5 years	15	63	2 years to < 5 years	13	68
	5 years or more	4	17	5 years or more	3	16

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]Value calculated as a percentage of eligible participants responding “No, but did at one point”.
[4]Value calculated as a percentage of confident participants responding “No, but did at one point”.

Table 4.6. Testes presence as grouped by age of the 126 eligible[1] participants and the 108 confident[2] participants.

Group		Eligible participants			Confident participants		
Age (years)	Testes	n[3]	n[4]	%[5]	n[6]	n[7]	%[8]
18-24	Yes	47	43	91	44	40	91
	No		4	9		4	9
25-34	Yes	58	48	83	46	39	85
	No		10	17		7	15
35-44	Yes	14	5	36	12	4	33
	No		9	64		8	67
45-54	Yes	2	1	50	1	1	100
	No		1	50		0	0
55-64	Yes	3	3	100	3	3	100
	No		0	0		0	0
65+	Yes	2	2	100	2	2	100
	No		0	0		0	0

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]The number of eligible participants in each age category.
[4]The number of eligible participants in each age category in each testes category.
[5]The percentage of eligible participants in each age category in each testes category out of the eligible participants in each age category.
[6]The number of confident participants in each age category.
[7]The number of confident participants in each age category in each testes category.
[8]The percentage of confident participants in each age category in each testes category out of the confident participants in each age category.

Table 4.7. The use of feminizing hormone therapy (FHT) sourced through non-prescription, or "do it yourself" (DIY) means, as compared with testes presence among the 108 confident[1] participants.

Testes presence	DIY	n	%[2]	%[3]
Yes	Yes	14	13	16
	No	75	69	84
No	Yes	5	5	26
	No	14	13	74

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The percentage out of the total 108 confident participants.
[3]The percentage out of the number of participants in the given testes category 89 with testes and 19 without testes, respectively.

Table 4.8. Current feminizing hormone therapy (FHT) medication use of the 126 eligible[1] participants and the 108 confident[2] participants, at the time of taking the survey[3].

	Eligible participants		Confident participants	
Medication	n	%[4]	n	%[4]
Antiandrogens	74	59	68	63
Bicalutamide	5	4	4	4
Cyproterone acetate	5	4	5	5
Dutasteride	3	2	3	3
Finasteride	16	13	13	12
Leuprolide	2	2	2	2
Minoxidil	2	2	1	1
Spironolactone	49	39	45	42
Estrogens	125	99	107	99
Progestogens	78	62	63	58
Androgens	2	2	2	2

[1]Eligible participants are those who were taking FHT, consented to the survey, were not minors, and completed the entire survey.

[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.

[3]Some participants may have taken different medications in the past.

[4]The percent of the 126 eligible and 108 confident participants.

Table 4.9. Details of the antiandrogen use of the 108 confident[1] participants, at the time of taking the survey[2].

	Bicalutamide	Cyproterone Acetate	Finasteride	Leuprolide	Spironolactone
Duration					3
< 3 months	0	0	0	0	5
3 to < 6 months	2	1	1	1	6
6 months to < one year	1	1	1	1	25
1 year to < 5 years	1	2	11	0	4
5 years to < 10 years	0	1	0	0	2
10 years or more	0	0	0	0	
Administration					
Oral	4	5	13	0	45
Intramuscular injection	0	0	0	2	0
Frequency					
> every day	0	0	0	0	17
Every day	4	2	13	0	28
Every other day	0	3	0	0	0
Every week	0	0	0	0	0
< every other week	0	0	0	0	0
< every two months	0	0	0	2	0
Dosage					
< 1 mg	0	0	1	0	0
1 mg to < 2 mg	0	0	3	0	0
2 mg to < 4 mg	0	0	2	0	0
4 mg to < 6 mg	0	0	6	0	0
< 5 mg	0	1	0	0	0
5 mg to < 10 mg	0	2	0	0	0
10 mg to < 25 mg	0	2	0	2	0
25 mg to < 50 mg	2	0	0	0	7
50 mg to < 100 mg	2	0	0	0	15
100 mg to < 200 mg	0	0	0	0	18
200 mg to < 300 mg	0	0	0	0	3
300 mg to < 400 mg	0	0	0	0	0
400 mg or more	0	0	0	0	2

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.

[2]Some participants may have taken different medications in the past. Please note while dutasteride and minoxidil were included in Table 4.8, they were not included in the present table because they were not inquired about in the survey. Participants reported their use in the other category but did not provide dose, administration route or frequency of taking their dose.

Table 4.10. Details of the estrogen use of the 108 confident[1] participants, at the time of taking the survey[2].

	Estrogen hemihydrate	Estradiol valerate	Estradiol Cypionate	Estradiol tablets	Implanted Capsule
Duration					
< 3 months	1	1	0	1	0
3 to < 6 months	1	1	0	5	0
6 months to < 1 year	0	3	0	8	0
1 year to < 5 years	5	32	4	25	0
5 years to < 10 years	0	3	2	10	1
10 or more years	2	1	1	0	0
Administration route					
Gel	3	0	0	0	0
Patch	6	0	0	0	0
Intramuscular injection	0	22	5	0	0
Subcutaneous injection	0	19	2	0	0
Oral tablets	0	0	0	27	0
Sublingual tablets	0	0	0	22	0
Implanted capsule	0	0	0	0	1
Frequency					
> twice a day	0	0	0	2	0
Twice a day	1	0	0	35	0
Once a day	3	0	0	12	0
Twice weekly	3	0	1	0	0
Every 5 days	0	7	0	0	0
Once a week	2	32	3	0	0
Every other week	0	2	2	0	0
Once a month	0	0	0	0	0
Every 2 months to < 4 months	0	0	0	0	1
Dosage					
1mL of 5 mg/mL	0	0	3	0	0
2 mL of 5 mg/mL	0	0	1	0	0
5 mL or more of 5 mg/mL	0	0	3	0	0
< than 0.05 mL of 100 mg/5mL	0	1	0	0	0
0.05 mL to < 0.1 mL of 100 mg/5mL	0	1	0	0	0
0.1 mL to < 0.2 mL of 100 mg/5mL	0	4	0	0	0
0.2 mL to < 0.5 mL of 100 mg/5mL	0	20	0	0	0
0.5 mL to < 1 mL of 100 mg/5mL	0	1	0	0	0
1 mL to < 2 mL of 100 mg/5mL	0	0	0	0	0
2 mL or more of 100 mg/5mL	0	1	0	0	0
< than 0.05 mL of 200 mg/5mL	0	0	0	0	0
0.05 mL to < 0.1 mL of 200 mg/5mL	0	0	0	0	0
0.1 mL to < 0.2 mL of 200 mg/5mL	0	6	0	0	0
0.2 mL to < 0.5 mL of 200 mg/5mL	0	6	0	0	0
0.5 mL to < 1 mL of 200 mg/5mL	0	0	0	0	0
1 mL to < 2 mL of 200 mg/5mL	0	0	0	0	0
2 mL or more of 200 mg/5mL	0	1	0	0	0
50 µg to < 100 µg	2	0	0	0	0
100 µg to < 200 µg	1	0	0	0	0
200 µg to < 300 µg	3	0	0	0	0

1 mg to < 2 mg	1	0	0	5	0
2 mg to < 4 mg	2	0	0	16	0
4 mg to < 6 mg	0	0	0	20	0
6 mg to < 8 mg	0	0	0	3	0
8 mg to < 10 mg	0	0	0	5	0
75 mg	0	0	0	0	1

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Some participants may have taken different medications in the past.

Table 4.11. Details of the progesterone use of the 108 confident[1] participants, at the time of taking the survey[2].

	Progesterone
Duration	
< 3 months	5
3 to < 6 months	7
6 months to < one year	10
1 year to < 5 years	37
5 years to < 10 years	2
10 years or more	1
Administration route	
Oral	41
Suppository	17
Mixed	3
Injection	1
Frequency	
Every day	40
Did not answer	22
Dosage	
< 25 mg	2
25 mg to < 50 mg	1
50 mg to < 100 mg	4
100 mg to < 200 mg	33
200 to < 300 mg	21

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Some participants may have taken different medications in the past.

Table 4.12. Current feminizing hormone therapy (FHT) medication use, as grouped by FHT regimen, of the 108 confident[1] participants, at the time of taking the survey[2].

Regimen	n[1]	Antiandrogen utilized	n[1]	%[3]
Estrogen only	16	-	16	15
Antiandrogen only	1	Spironolactone	1	1
Estrogen + Progesterone	23	-	23	21
Estrogen + Antiandrogen	28	Cyproterone Acetate	4	4
		Dutasteride	1	1
		Finasteride	1	1
		Leuprolide	2	2
		Spironolactone	18	17
		Spironolactone and Finasteride	1	1
		Bicalutamide, Finasteride, and Spironolactone	1	1
		Finasteride, Minoxidil	0	0
Estrogen + Testosterone	1	-	1	1
Estrogen + Progesterone + Antiandrogen	38	Bicalutamide	3	3
		Cyproterone Acetate	1	1
		Dutasteride	1	1
		Finasteride	8	7
		Minoxidil	1	1
		Spironolactone[4]	22	20
		Spironolactone and Finasteride	1	1
		Dutasteride and Spironolactone	1	1
		Bicalutamide and Finasteride	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	Finasteride	1	1

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]Some participants may have taken different medications in the past.
[3]As a percentage of participants taking specific regimen out of the 108 confident participants.
[4]Though grouped as simply taking estrogen, progesterone, and spironolactone, one participant taking estrogen, progesterone, and spironolactone was taking bioidentical progesterone and also the progestogen medroxyprogesterone acetate. This brings the total number of unique regimens to 21.

Despite the testes being responsible for the production of testosterone, seven participants still utilized the estrogen plus progesterone and antiandrogen regimen after their testicles were removed (Table 4.13). Nonetheless, confident participants with testicles still present were more likely ($P = 0.0106$) to use hormone regimens with an antiandrogen than those without testicles. Of the seven confident participants who indicated that they did not have testes and were also taking an antiandrogen, three were taking finasteride, two were taking spironolactone, and one each were taking dutasteride and minoxidil. Thus, in five of the seven cases in which participants were taking an antiandrogen without testes (the primary source of testosterone synthesis), the antiandrogen in question was specifically a 5α-reductase inhibitor, which interferes with the conversion of testosterone to DHT.

It was not possible to draw any conclusions regarding racial preferences for differing FHT regimens given that the overwhelming majority of the survey participants were Caucasian (Table 4.14). Similarly, with most of the survey participants being less than 35 years old, detecting significant differences in regimen choice based on age was not possible (Table 4.15).

Forty-five percent of the eligible and confident survey participants were using psychiatric medicine (Table 4.16). Based on the length of time that participants had been taking estrogen for their FHT (Table 4.17), the use of psychiatric medications did not decrease as the length of FHT increased (Table 4.18). Additionally, the use of psychiatric medications did not decrease in participants that had their testicles removed (Table 4.19). Finally, the use of psychiatric medication was distributed across all FHT regimens except for the antiandrogen only and estrogen plus testosterone regimens which each only had one participant and neither participant using psychiatric medications (Table 4.20).

Table 4.13. Specific feminizing hormone therapy (FHT) regimens, alongside presence of testes in each regimen, of the 108 confident[2] participants.

Regimen	n[2]	Has testes?	n	%[3]
Estrogen only	16	Yes	12	11
		No	4	4
Antiandrogen only	1	Yes	1	1
		No	0	0
Estrogen + Progesterone	23	Yes	16	15
		No	7	6
Estrogen + Antiandrogen	28	Yes	28	26
		No	0	0
Estrogen + Testosterone	1	Yes	0	0
		No	1	1
Estrogen + Progesterone + Antiandrogen	38	Yes	31	29
		No	7	6
Estrogen + Progesterone + Antiandrogen + Testosterone	1	Yes	1	1
		No	0	0

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]The number of confident participants taking the given regimen.
[3]As a percentage of the 108 confident participants.

Table 4.14. The feminizing hormone therapy (FHT) regimen use, grouped according to race, of the 108 confident[1] participants.

	Estrogen only	Antiandrogen	Estrogen + Progesterone	Estrogen + Antiandrogen	Estrogen + Testosterone	Estrogen + Progesterone + Antiandrogen	Estrogen + Progesterone + Antiandrogen + Testosterone
American Indian/Native American or Alaska Native	1	0	0	0	1	1	0
Asian	1	0	1	2	0	3	0
Black or African American	0	0	1	1	0	1	0
Hispanic or Latino	1	0	2	1	0	3	0
Middle Eastern	0	0	0	0	0	0	0
Native Hawaiian or Other Pacific Islander	0	0	0	0	0	0	0
White or Caucasian	13	1	20	24	1	33	1
Prefer not to say	0	0	0	1	0	2	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.

Table 4.15. The feminizing hormone therapy (FHT) regimen use, grouped according to age group, of the 108 confident[1] participants.

	Estrogen only	Antiandrogen	Estrogen + Progesterone	Estrogen + Antiandrogen	Estrogen + Testosterone	Estrogen + Progesterone + Antiandrogen	Estrogen + Progesterone + Antiandrogen + Testosterone
Age (years)	n	n	n	n	n	n	n
18-24	7	1	11	14	0	11	0
25-34	5	0	9	12	0	19	1
35-44	2	0	3	2	1	4	0
45-54	0	0	0	0	0	1	0
55-64	0	0	0	0	0	3	0
65+	2	0	0	0	0	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.

Table 4.16. The use of medication besides feminizing hormone therapy (FHT) among the 126 eligible[1] participants and the 108 confident[2] participants.

Group	Eligible participants		Confident participants	
Other medication	n	%	n	%
Antianxiety	32	25	27	25
Antidepressant	44	35	38	35
Mood stabilizer	15	12	12	11
Antipsychotic	8	6	5	5
Nutritional supplement	24	19	21	19
Immunosuppressant	2	2	2	2
Any psychiatric medication	57	45	49	45
No psychiatric medication	69	55	59	55
No medications besides FHT	58	46	50	46

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.

Table 4.17. The length of time the 126 eligible[1] participants and the 108 confident[2] participants have been using estrogen.

Group	Eligible participants		Confident participants	
Length of time taking estrogen	n	%[4]	n	%[5]
Not taking estrogen	1		1	
< 3 months	3	2	3	3
3 to < 6 months	8	7	7	7
6 months to < 1 year	12	10	11	10
1 year to < 5 years	73	60	66	62
5 years to < 10 years	21	17	16	15
10 or more years	5	4	4	4
Data not collected [3]	4	3	1	1

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen. Three participants miscategorized themselves and therefore could not provide information on the length of time they were taking estrogen. One participant was not taking estrogen, and thus the survey did not collect information on how long they took estrogen.
[4]As a percentage of the 122 eligible participants taking estrogen. Note 4 of the 126 eligible participants did not provide data on length of time.
[5]As a percentage of the 107 confident participants taking estrogen.

Table 4.18. The use of psychiatric medication of any kind relative to the length of time participant has been using feminizing hormone therapy (FHT), among the 126 eligible[1] participants and the 108 confident[2] participants.

Group	Eligible participants		Confident participants	
Length of time taking estrogen[3]	n	%[4]	n	%[5]
< 3 months	1	2	1	2
3 to < 6 months	4	7	4	8
6 months to < 1 year	4	7	4	8
1 year to < 5 years	35	61	32	65
5 years to < 10 years	9	16	6	12
10 or more years	3	5	2	4
Data not collected [3]	1	2	0	0

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen. One participant taking psychiatric medication miscategorized herself, and therefore could not provide information on the length of time she was taking estrogen.
[4]As a percentage of the 57 eligible participants taking psychiatric medication.
[5]As a percentage of the 49 confident participants taking psychiatric medication.

Table 4.19. The use of psychiatric medication of any kind, compared with presence or lack thereof of testicles, among the 126 eligible[1] participants and the 108 confident[2] participants.

	Eligible participants			Confident participants		
	n	Number that also took psychiatric medicine	%[3]	n	Number that also took psychiatric medicine	%[3]
Testes present	102	42	41	89	39	44
Testes removed	24	15	63	19	10	53

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]Psychiatric medication use as a percentage of testes presence or not.

Table 4.20. The frequency at which the 108 confident[1] participants use psychiatric medications, grouped according to feminizing hormone therapy (FHT) regimen.

Result	Total in regimen	Antidepressant		Antianxiety		Mood stabilizer		Antipsychotic	
Regimen	n	n	%[2]	n	%[2]	n	%[2]	n	%[2]
Estrogen only	16	6	38	3	19	1	6	1	6
Antiandrogen only	1	0	0	0	0	0	0	0	0
Estrogen + Progesterone	23	8	35	6	26	1	4	0	0
Estrogen + Antiandrogen	28	12	43	11	39	3	11	0	0
Estrogen + Testosterone	1	0	0	0	0	0	0	0	0
Estrogen + Progesterone + Antiandrogen	38	11	29	7	18	7	18	4	11
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	0	0	0	0	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]As a percentage of the total number of participants in a given regimen.

A majority of the survey participants taking FHT were having their blood sex hormone concentrations evaluated at least once a year, but two participants had never had their blood hormone levels evaluated (Table 4.21). Confident survey participants who had been undergoing FHT for less than one year were more likely (P = 0.0097) to have their hormone levels checked more frequently than every six months compared to those that had utilized FHT for more than one year (Table 4.22). Those who had testes were more likely (P = 0.0082) to test their hormone levels more frequently than every six months than those without testes (Table 4.23). There was not a difference in the frequency of blood hormone level tests between DIY and prescription FHT users (Table 4.24).

The majority of eligible participants had blood hormone levels within range for their gender (Table 4.25). The specifics of the question's phrasing left some room for ambiguity, as the survey asked "At your last blood hormone level check, were your values considered within range for your gender(s)?" and while among TGD people, gender is generally considered to refer to one's gender identity – that is, their current lived gender experience – it is not a term with a universally understood meaning. Thus, there may have been some TGD participants who misunderstood the question to mean "At your last blood hormone level check, were your values considered within range for your assigned gender at birth?" Some participants did not know whether or not their hormone levels were within range, though this too may have been influenced by the question's ambiguous phrasing. All but one of the 19 confident survey participants who had their testes removed had blood sex hormone levels within range for their gender (Table 4.26). Interestingly, those survey participants that used DIY FHT did not differ from those using prescription only FHT with regard to their blood hormone concentrations being in or out of range for their gender (Table 4.27).

Table 4.21. The frequency at which the 126 eligible[1] participants and the 108 confident[2] participants get their hormone blood concentrations checked.

Group	Eligible participants		Confident participants	
Hormone level test frequency	n	%[3]	n	%[4]
> every 3 months	6	5	5	5
3 to < every 6 months	59	47	53	49
6 to < every 9 months	36	29	31	29
9 months to < every year	10	8	7	6
1 to < every 2 years	11	0	9	8
< every 2 years	2	2	2	2
Never	2	2	1	1

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]Out of 126 eligible participants.
[4]Out of 108 confident participants.

Table 4.22. How frequently confident[1] participants checked their blood hormone concentrations, as grouped by length of time[2] taking feminizing hormone therapy (FHT).

FHT time	n[3]	Hormone level test frequency	n	%[4]
< 3 months	3	> every 3 months	2	67
		Between every 3 months and < every 6 months	1	33
		Between every 6 months and < every 9 months	0	0
		Between every 9 months and < every year	0	0
		Between every year and <every 2 years	0	0
		< every 2 years	0	0
		Never	0	0
3 to < 6 months	7	> every 3 months	0	0
		Between every 3 months and < every 6 months	6	86
		Between every 6 months and < every 9 months	1	14
		Between every 9 months and < every year	0	0
		Between every year and < every 2 years	0	0
		< every 2 years	0	0
		Never	0	0
6 months to < 1 year	11	> every 3 months	0	0
		Between every 3 months and < every 6 months	9	82
		Between every 6 months and < every 9 months	1	9
		Between every 9 months and < every year	0	0
		Between every year and < every 2 years	0	0
		< every 2 years	0	0
		Never	0	0
1 year to < 5 years	66	> every 3 months	1	2
		Between every 3 months and < every 6 months	33	50
		Between every 6 months and < every 9 months	19	29
		Between every 9 months and < every year	6	9
		Between every year and < every 2 years	0	0
		< every 2 years	1	2
		Never	1	2
5 years to < 10 years	16	> every 3 months	1	6
		Between every 3 months and < every 6 months	4	25
		Between every 6 months and < every 9 months	7	44
		Between every 9 months and < every year	0	0
		Between every year and < every 2 years	0	0
		< every 2 years	1	6
		Never	0	0
10 or more years	4	> every 3 months	0	0
		Between every 3 months and < every 6 months	0	0
		Between every 6 months and < every 9 months	3	75
		Between every 9 months and < every year	1	25
		Between every year and < every 2 years	0	0
		< every 2 years	0	0
		Never	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.

[2]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen. One confident participant was not taking estrogen, and thus is excluded.

[3]The number of confident participants having used FHT for the given time.
[4]The percentage of confident participants having used FHT for the given time who had their blood tested at the given frequency out of the total confident participants having used FHT for the given time.

Table 4.23. The frequency at which the 108 confident[1] participants get their hormone blood concentrations checked compared with the presence of testes.

Group			
Hormone level test frequency	Testes	n	%[2]
> every 3 months (5 participants)	Yes	4	4
	No	1	5
3 to < every 6 months (53 participants)	Yes	49	55
	No	4	21
6 to < every 9 months (31 participants)	Yes	23	26
	No	8	42
9 months to < every year (7 participants)	Yes	5	6
	No	2	11
1 to < every 2 years (9 participants)	Yes	6	7
	No	3	16
< every 2 years (2 participants)	Yes	1	1
	No	1	5
Never (1 participants)	Yes	1	1
	No	0	0

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]As a percentage of the 89 participants with testes or as a percentage of the 19 participants without testes.

Table 4.24. The frequency at which the 108 confident[1] participants got their hormone blood concentrations checked, compared with use of non-prescription sourced, "do it yourself" (DIY) feminizing hormone therapy (FHT) use.

Hormone level test frequency	DIY	n	%[2]
> every 3 months (5 participants)	Yes	0	0
	No	5	6
3 to < every 6 months (53 participants)	Yes	7	37
	No	46	52
6 to < every 9 months (31 participants)	Yes	9	47
	No	22	25
9 months to < every year (7 participants)	Yes	1	5
	No	6	7
1 to < every 2 years (9 participants)	Yes	1	5
	No	8	9
< every 2 years (2 participants)	Yes	0	0
	No	2	2
Never (1 participants)	Yes	1	5
	No	0	0

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]As a percentage of the 89 participants that utilized prescription FHT or as a percentage of the 19 participants that utilized DIY FHT.

Table 4.25. The number of participants, out of the eligible[1] 126 and the confident[2] 108, whose blood hormone levels were within range for their gender[3] at their last blood check.

Group	Eligible participants		Confident participants	
Blood levels within range	n	%	n	%
Yes	93	74	80	74
No	19	15	17	16
Do not know	7	6	7	6
Did not answer	7	6	4	4

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]The question asked "At your last blood hormone level check, were your values considered within range for your gender(s)?". This left the exact interpretation of the question slightly ambiguous due to the lack of universal consensus among society as to the definitions sex and gender. Gender, however, is more commonly understood to be the gender identity a person currently expresses, and not their gender assigned at birth (AGAB).

Table 4.26. The number of the 108 confident participantst[1] 108, whose blood hormone levels were within range for their gender[2] at their last blood check compared with the presence of testes.

Group			
Blood levels within range	Testes	n	%[3]
Yes (80 participants)	Yes	62	70
	No	18	95
No (17 participants)	Yes	16	18
	No	1	5
Do not know (7 participants)	Yes	7	8
	No	0	0
Did not answer (4 participants)	Yes	4	4
	No	0	0

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]The question asked "At your last blood hormone level check, were your values considered within range for your gender(s)?". This left the exact interpretation of the question slightly ambiguous due to the lack of universal consensus among society as to the definitions sex and gender. Gender, however, is more commonly understood to be the gender identity a person currently expresses, and not their gender assigned at birth (AGAB).
[3]As a percentage of the 89 participants with testes or as a percentage of the 19 participants without testes.

Table 4.27. The number of participants out of the 108 confident[2] participants whose blood hormone levels were within range for their gender[3] at their last blood check compared with use of non-prescription sourced, "do it yourself" (DIY) feminizing hormone therapy (FHT) use.

Blood levels within range	DIY	n	%[3]
Yes (80 participants)	Yes	13	68
	No	67	75
No (17 participants)	Yes	2	11
	No	15	17
Do not know (7 participants)	Yes	3	16
	No	4	4
Did not answer (4 participants)	Yes	1	5
	No	3	3

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]The question asked "At your last blood hormone level check, were your values considered within range for your gender(s)?". This left the exact interpretation of the question slightly ambiguous due to the lack of universal consensus among society as to the definitions sex and gender. Gender, however, is more commonly understood to be the gender identity a person currently expresses, and not their gender assigned at birth (AGAB).
[3]As a percentage of the 89 participants that utilized prescription FHT or as a percentage of the 19 participants that utilized DIY FHT.

Finally, the length of time that participants had been undergoing FHT was not a significant determinant of if their blood hormone levels were or were not in range for their gender (Table 4.28).

The percentage of confident survey participants that never or rarely postponed a dose of their FHT medications was 71% versus 7% ($P < 0.001$) that missed a dose nearly every time or often (Table 4.29). The propensity to miss/postpone or not miss/postpone FHT medication doses for participants without testes (Table 4.30) or that utilized DIY FHT (Table 4.31) did not differ from those with testes or that utilized prescribed medications. Participants who had been taking FHT medications for less than a year were more likely ($P = 0.0217$) to never or rarely miss or delay a dose relative to those participants that had been taking FHT medications for over a year, who were more likely to miss or delay a dose nearly every time, often, or sometimes (Table 4.32).

Side effects

Among the 126 eligible participants, five reported cardiovascular issues. These five participants had been using FHT for over a year, and the two that had strokes had been taking estrogen for over ten years (Table 4.33). The 126 eligible survey participants self-reported a host of other side effects (Table 4.34). Twenty-nine percent of eligible and confident survey participants reported abdominal cramping. The participants reporting abdominal cramping were distributed across all of the FHT regimens that that had more than one participant (Table 4.35).

Libido and mood changes

Of the 108 confident survey participants 92 reported changes in libido, 50 reported disruptive mood changes and seven reported mood changes that were not disruptive (Table 4.36).

Table 4.28. The number of participants, out of the 108 confident[1] survey participants whose blood hormone levels were within range for their gender[2] at their last blood check compared with length of time[3] the participants have been using feminizing hormone therapy (FHT).

FHT time	Blood hormone levels within range	n	%[4]
< 3 months (3 participants)	Yes	0	0
	No	1	33
	Do not know	0	3
	Did not answer	2	66
3 to < 6 months (7 participants)	Yes	3	43
	No	1	14
	Do not know	2	29
	Did not answer	1	14
6 months to < 1 year (11 participants)	Yes	7	64
	No	2	18
	Do not know	2	18
	Did not answer	0	0
1 year to < 5 years (66 participants)	Yes	52	79
	No	11	17
	Do not know	3	5
	Did not answer	0	0
5 years to < 10 years (16 participants)	Yes	16	100
	No	0	0
	Do not know	0	0
	Did not answer	0	0
10 or more years (1 participant)	Yes	2	50
	No	1	25
	Do not know	0	0
	Did not answer	1	25
Data not collected[3]		1	--

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]The question asked "At your last blood hormone level check, were your values considered within range for your gender(s)?". This left the exact interpretation of the question slightly ambiguous due to the lack of universal consensus among society as to the definitions sex and gender. Gender, however, is more commonly understood to be the gender identity a person currently expresses, and not their gender assigned at birth (AGAB).
[3]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen. One confident participant was not taking estrogen and is categorized as data not collected.
[4]As a percentage of confident participants taking FHT for the given time.

Table 4.29. The frequency at which the 126 eligible[1] participants and the 108 confident[2] participants miss or postpone a dose of one of their medications.

Group	Eligible participants		Confident participants	
How frequently do you miss or postpone a dose?	n	%[3]	n	%[4]
Nearly every time	4	3	3	3
Often	6	5	5	5
Sometimes	26	21	23	21
Rarely	66	52	57	54
Never	24	19	20	19

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]As a percentage of eligible participants.
[4]As a percentage of confident participants.

Table 4.30. The frequency at which the 108 confident[1] participants miss or postpone a dose of one of their medications, grouped by the presence of testes.

How frequently do you miss or postpone a dose?	Testes	n	%[2]
Nearly every time (3 participants)	Yes	2	2
	No	1	5
Often (5 participants)	Yes	5	6
	No	0	0
Sometimes (23 participants)	Yes	18	20
	No	5	26
Rarely (57 participants)	Yes	49	55
	No	8	42
Never (20 participants)	Yes	15	17
	No	5	26

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]As a percentage of the 89 participants with testes or as a percentage of the 19 participants without testes.

Table 4.31. The frequency at which the 108 confident[1] participants miss or postpone a dose of one of their medications, grouped by the use of non-prescription, "do it yourself" (DIY) feminizing hormone therapy (FHT).

How frequently do you miss or postpone a dose?	DIY	n	%[2]
Nearly every time (3 participants)	Yes	2	11
	No	1	1
Often (5 participants)	Yes	2	11
	No	3	3
Sometimes (23 participants)	Yes	3	16
	No	20	22
Rarely (57 participants)	Yes	9	47
	No	48	54
Never (20 participants)	Yes	3	16
	No	17	19

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]As a percentage of the 89 participants that utilized prescription FHT or as a percentage of the 19 participants that utilized DIY FHT.

Table 4.32. The frequency at which the 108 confident[1] participants miss or postpone a dose of one of their medications, grouped by the length of time[2] they have used feminizing hormone therapy (FHT).

FHT time	How often do you miss or postpone a dose	n	%[3]
< 3 months (3 participants)	Nearly every time	0	0
	Often	0	0
	Sometimes	0	0
	Rarely	0	0
	Never	3	100
3 to < 6 months (7 participants)	Nearly every time	1	14
	Often	0	0
	Sometimes	0	0
	Rarely	4	57
	Never	2	29
6 months to < 1 year (11 participants)	Nearly every time	0	0
	Often	0	0
	Sometimes	1	9
	Rarely	8	73
	Never	2	18
1 year to < 5 years (66 participants)	Nearly every time	2	3
	Often	5	8
	Sometimes	14	21
	Rarely	35	53
	Never	10	15
5 years to < 10 years (16 participants)	Nearly every time	0	0
	Often	0	0
	Sometimes	7	44
	Rarely	8	50
	Never	1	6
10 or more years (1 participant)	Nearly every time	0	0
	Often	0	0
	Sometimes	1	25
	Rarely	1	25
	Never	2	50
Data not collected[3]		1	

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen.
[3]As a percentage of confident participants taking FHT for the given time.

Table 4.33. The details of the five eligible survey participants reporting having a cardiovascular event.

Cardiovascular event	Age (years)	Length of time taking estrogen	Frequency of check	Blood values within range?	Estrogen administration method	Dosage	Frequency of administration
Blood clot	25-34	5 to < 10 years	< every 2 years	Yes	Oral	4 mg to < 6 mg	Twice per day
Blood clot	35-44	1 to < 5 years	3 to < 6 months	No	Intramuscular injection	0.2mL to < 0.5mL of 100mg/5mL estradiol valerate	Once per week
Blood clot	55-64	1 to < 5 years	3 to < 6 months	Yes	Switched to patches from oral tablets after cardiovascular event	Oral estradiol use was 6mg	Oral estradiol was administered daily
Stroke	65+	10+ years	6 to < 9 months	ND	Patch	50 µg to < 100 µg	Once per week
Stroke	65+	10+ years	6 to < 9 months	No	Patch	50 µg to < 100 µg	Once per week

Table 4.34. The frequency at which the 126 eligible[1] participants and 108 confident[2] participants experienced other miscellaneous side effects.

Group	Eligible participants		Confident participants	
Other side effects[3]	n	%	n	%
Increase in joint, muscle, or foot pain	3	2	3	2
Erection pain	1	1	0	0
Increased urination frequency or difficulty	2	2	1	1
Vision decrease	1	1	1	1
Lowered resting heart rate, hypotension	1	1	1	1
Dry eyes	1	1	1	1
Drowsiness	1	1	1	1
Skin irritation from estrogen patches	1	1	1	1
Hot flashes	4	3	3	2
Nausea	1	1	0	0
Mood swings	5	4	3	2
PMS symptoms	2	2	1	1
Increased dizziness and lightheadedness	1	1	0	0
More frequent sickness	1	1	0	0

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]These side effects were write-in responses about which the survey did not directly ask.

Table 4.35. The frequency at which the 126 eligible[1] participants and the 108 confident[2] participants reported experiencing abdominal cramping, as grouped by regimen.

		Eligible		Confident	
Regimen	Abdominal cramping	n	%[3]	n	%[4]
Estrogen only		18		16	
	Yes	7	39	7	44
	No	11	61	9	56
Antiandrogen only		1		1	
	Yes	0	0	0	0
	No	1	100	1	100
Estrogen + Progesterone		33		23	
	Yes	9	27	6	26
	No	24	73	17	74
Estrogen + Antiandrogen		29		28	
	Yes	7	24	7	25
	No	22	76	21	75
Estrogen + Testosterone		1		1	
	Yes	0	0	0	0
	No	1	100	1	100
Estrogen + Progesterone + Antiandrogen		43		38	
	Yes	12	28	10	26
	No	31	72	28	74
Estrogen + Progesterone + Antiandrogen + Testosterone		1		1	
	Yes	1	100	1	100
	No	0	0	0	0

[1]Eligible participants are those who were taking feminizing hormone therapy, consented to the survey, were not minors, and completed the entire survey.
[2]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[3]As a percentage of the eligible participants in each regimen.
[4]As a percentage of the confident participants in each regimen.

Table 4.36. The frequency at which the 108 confident[1] participants experience libido or mood changes, grouped according to feminizing hormone therapy (FHT) regimen.

Result		Libido changes		Disruptive mood changes		Mood changes not indicated to be disruptive	
Regimen	n[2]	n[3]	%[4]	n[3]	%[4]	n[3]	%[4]
Estrogen only	16	10	63	5	31	1	6
Antiandrogen only	1	1	100	0	0	0	0
Estrogen + Progesterone	23	22	95	12	52	1	4
Estrogen + Antiandrogen	28	23	82	12	43	4	14
Estrogen + Testosterone	1	1	100	0	0	0	0
Estrogen + Progesterone + Antiandrogen	38	34	89	20	53	1	3
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	1	100	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Total confident participants taking the given FHT regimen.
[3]Total number in a given regimen experiencing a change.
[4]As a percentage of total confident participants taking the given FHT regimen.

Of the 92 participants reporting libido changes, 15 reported increased libido, 34 indicated libido remained the same and 43 indicated libido decreased and these changes were distributed across the seven FHT regimens utilized by survey participants (Table 4.37). Similarly, 58 of the 92 participants reporting libido changes indicated they desired intimacy in different ways or/and at different times while taking FHT medications and these participants were found in five of the seven FHT regimens (Table 4.38). Of the 92 participants reporting libido changes across the seven identified FHT regimens, 45 of them were satisfied with the changes, 21 were somewhat satisfied, 14 were neither satisfied nor unsatisfied, eight were somewhat unsatisfied and four were unsatisfied (Table 4.39). The length of time that the 92 participants had been taking FHT medications did not significantly influence changes in libido quantity (Table 4.40), desiring intimacy at different times or ways (Table 4.41) or satisfaction with these changes (Table 4.42). Participants taking FHT regimens containing progesterone were more likely ($P = 0.0221$) to experience libido changes than those taking FHT regimens that did not contain progesterone.

The 57 participants reporting mood changes were distributed across five of the seven FHT regimens (Table 4.43). Of the 57 participants reporting mood changes the length of time that they had been taking FHT medications did not significantly affect these changes (Table 4.44). Of the 57 participants reporting mood changes those that still had testes were more likely ($P = 0.0367$) to experience mood changes than those without testes (Table 4.44), but there was no difference between the ratio of disruptive to non-disruptive mood changes based on testes presence. Finally, psychiatric medication use did not affect the results of the 57 participants reporting mood changes due to FHT (Table 4.44).

Table 4.37. How the libido quantity changed due to feminizing hormone therapy (FHT), as grouped by FHT regimen of the 92 confident[1] participants who reported experiencing libido changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	10	63	Increased	1	10
				Remained the same	2	20
				Decreased	7	70
Antiandrogen only	1	1	100	Increased	0	0
				Remained the same	0	0
				Decreased	1	100
Estrogen + Progesterone	23	22	96	Increased	5	23
				Remained the same	8	36
				Decreased	9	41
Estrogen + Antiandrogen	28	23	82	Increased	0	0
				Remained the same	11	48
				Decreased	12	52
Estrogen + Testosterone	1	1	100	Increased	0	0
				Remained the same	0	0
				Decreased	1	100
Estrogen + Progesterone + Antiandrogen	38	34	89	Increased	9	26
				Remained the same	12	35
				Decreased	13	38
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Increased	0	0
				Remained the same	1	100
				Decreased	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3] The number of confident participants using the given regimen who reported experiencing libido changes.
[4]The percentage of confident participants using the given regimen who reported experiencing libido changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their libido quantity changing by the given amount.
[6]As a percentage of the total number reporting a change for a given regimen.

Table 4.38. Whether the 92 confident[1] participants who reported experiencing libido changes experienced desiring intimacy in different times or different ways due to feminizing hormone therapy (FHT), as grouped by FHT regimen.

Regimen	n[2]	n[3]	%[4]	Different times or ways	n[5]	%[6]
Estrogen only	16	10	63	Yes	4	40
				No	6	60
Antiandrogen only	1	1	100	Yes	0	0
				No	1	100
Estrogen + Progesterone	23	22	96	Yes	15	68
				No	7	32
Estrogen + Antiandrogen	28	23	82	Yes	14	61
				No	9	39
Estrogen + Testosterone	1	1	100	Yes	0	0
				No	1	100
Estrogen + Progesterone + Antiandrogen	38	34	89	Yes	24	71
				No	10	29
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Yes	1	100
				No	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] The number of confident participants using the given regimen.
[3] The number of confident participants using the given regimen who reported experiencing libido changes
[4] The percentage of confident participants using the given regimen who reported experiencing libido changes out of the total confident participants using the given regimen.
[5] The number of confident participants using the given regimen who responded in the given way regarding whether their desire for intimacy shifted to different times or different ways.
[6]As a percentage of the total number reporting a change for a given regimen.

Table 4.39. How satisfied the 92 confident[1] participants who reported experiencing libido changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	10	63	Satisfied	3	30
				Somewhat satisfied	4	40
				Neither satisfied nor unsatisfied	2	20
				Somewhat unsatisfied	0	0
				Unsatisfied	1	10
Antiandrogen only	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	100
				Unsatisfied	0	0
Estrogen + Progesterone	23	22	96	Satisfied	12	55
				Somewhat satisfied	4	18
				Neither satisfied nor unsatisfied	2	9
				Somewhat unsatisfied	2	9
				Unsatisfied	2	9
Estrogen + Antiandrogen	28	23	82	Satisfied	9	39
				Somewhat satisfied	5	22
				Neither satisfied nor unsatisfied	8	35
				Somewhat unsatisfied	1	4
				Unsatisfied	0	0
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	1	100
Estrogen + Progesterone + Antiandrogen	38	34	89	Satisfied	21	62
				Somewhat satisfied	7	21
				Neither satisfied nor unsatisfied	2	6
				Somewhat unsatisfied	4	12
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing libido changes.
[4]The percentage of confident participants using the given regimen who reported experiencing libido changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their libido changes.
[6]As a percentage of the total number reporting a change for a given regimen.

Table 4.40. How the libido quantity of the 92 confident[1] participants who reported experiencing libido changes changed due to FHT, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	2	67	Increased	0	0
				Same	1	50
				Decreased	1	50
3 to < 6 months	7	6	86	Increased	0	0
				Same	3	50
				Decreased	3	50
6 months to < 1 year	11	9	82	Increased	0	0
				Same	6	67
				Decreased	3	33
1 year to < 5 years	66	59	89	Increased	14	24
				Same	20	34
				Decreased	25	42
5 years to < 10 years	16	13	81	Increased	1	8
				Same	4	31
				Decreased	8	62
10 or more years	4	2	50	Increased	0	0
				Same	0	0
				Decreased	2	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing libido changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing libido changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their libido quantity changing by the given amount.
[7]As a percentage of the total number reporting a change for a given length of time taking FHT.

Table 4.41. Whether the 92 confident[1] participants who reported experiencing libido changes experienced desiring intimacy in different times or different ways due to feminizing hormone therapy (FHT), as grouped length of time[1] using FHT.

FHT time	n[3]	n[4]	%[5]	Different times or ways	n[6]	%[7]
< 3 months	3	2	67	Yes	0	0
				No	2	100
3 to < 6 months	7	6	86	Yes	3	50
				No	3	50
6 months to < 1 year	11	9	82	Yes	8	89
				No	1	11
1 year to < 5 years	66	59	89	Yes	38	64
				No	21	36
5 years to < 10 years	16	13	81	Yes	9	69
				No	4	31
10 or more years	4	2	50	Yes	0	0
				No	2	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time participant has been using FHT estimated as length of time participant has been taking estrogen.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing libido changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing libido changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who responded in the given way regarding whether their desire for intimacy shifted to different times or different ways.
[7]As a percentage of the total number reporting a change for a given length of time taking FHT.

Table 4.42. How satisfied the 92 confident[1] participants who reported experiencing libido changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	2	67	Satisfied	1	50
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	50
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	6	86	Satisfied	3	50
				Somewhat satisfied	1	17
				Neither satisfied nor unsatisfied	1	17
				Somewhat unsatisfied	1	17
				Unsatisfied	0	0
6 months to < 1 year	11	9	82	Satisfied	4	44
				Somewhat satisfied	2	22
				Neither satisfied nor unsatisfied	2	22
				Somewhat unsatisfied	0	0
				Unsatisfied	1	11
1 year to < 5 years	66	59	89	Satisfied	31	53
				Somewhat satisfied	13	22
				Neither satisfied nor unsatisfied	8	14
				Somewhat unsatisfied	6	10
				Unsatisfied	1	2
5 years to < 10 years	16	13	81	Satisfied	5	38
				Somewhat satisfied	5	38
				Neither satisfied nor unsatisfied	2	15
				Somewhat unsatisfied	0	0
				Unsatisfied	1	8
10 or more years	4	2	50	Satisfied	1	50
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding dosage or administration.
[2] Length of time participant has been using FHT estimated as length of time participant has been taking estrogen.
[3] The number of confident participants having used FHT for the given time.
[4] The number of confident participants having used FHT for the given time who reported experiencing libido changes.
[5] The percentage of confident participants having used FHT for the given time who reported experiencing libido changes out of the total confident participants having used FHT for the given time.
[6] The number of confident participants having used FHT for the given time who were the given satisfaction level with their libido changes.
[7]As a percentage of the total number reporting a change for a given length of time taking FHT.

Table 4.43. The frequency at which the 108 confident[1] participants reported experiencing mood changes, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Mood changes	n[5]	%[6]
Estrogen only	16	6	38	Disruptive	5	83
				Not disruptive	1	17
Antiandrogen	1	0	0	No mood change reported		
Estrogen + Progesterone	23	13	57	Disruptive	12	92
				Not disruptive	1	7
Estrogen + Antiandrogen	28	16	57	Disruptive	12	75
				Not disruptive	4	25
Estrogen + Testosterone	1	0	0	No mood change reported		
Estrogen + Progesterone + Antiandrogen	38	21	55	Disruptive	20	95
				Not disruptive	1	5
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Disruptive	1	100
				Not disruptive	0	0

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing mood changes.
[4]The percentage of confident participants using the given regimen who reported experiencing mood changes out of the total confident participants using the given regimen.
[5]The number of confident participants with the given regimen who experienced the given type of mood changes.
[6]As a percentage of the total number reporting a change for a given regimen.

Table 4.44. The frequency at which the 108 confident[1] participants reported experiencing mood changes, as grouped by length of time[2] using feminizing hormone therapy (FHT), presence or lack thereof of testes, or use of psychiatric medication.

FHT time	n[3]	n[4]	%[5]	Mood changes	*n*[6]	%[7]
< 3 months	3	0	0	No mood changes reported		
3 to < 6 months	7	5	71	Disruptive mood changes	4	80
				Mood changes not indicated to be disruptive	1	20
6 months to < 1 year	11	8	73	Disruptive mood changes	7	88
				Mood changes not indicated to be disruptive	1	13
1 to < 5 years	66	33	50	Disruptive mood changes	29	88
				Mood changes not indicated to be disruptive	4	12
5 to < 10 years	16	10	63	Disruptive mood changes	10	100
				Mood changes not indicated to be disruptive	0	0
10 or more years	4	1	25	Disruptive mood changes	0	0
				Mood changes not indicated to be disruptive	1	100
Presence of testes						
Yes	89	51	57	Disruptive mood changes	45	88
				Mood changes not indicated to be disruptive	6	12
No	19	6	32	Disruptive mood changes	5	83
				Mood changes not indicated to be disruptive	1	17
Any psychiatric medication use						
Yes	49	26	53	Disruptive mood changes	23	88
				Mood changes not indicated to be disruptive	3	12
No	59	31	69	Disruptive mood changes	27	87
				Mood changes not indicated to be disruptive	4	13

[1]Confident participants are those of the eligible participants who knew all their information without any uncertainty regarding medication dosage or administration methods.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants in the given category.
[4]The number of confident participants in the given category who reported experiencing mood changes.
[5]The percentage of confident participants in the given category who reported experiencing mood changes out of the total confident participants in the given category.
[6]The number of confident participants in the given category who experienced the given type of mood changes.
[7]As a percentage of the total number reporting a change for a given FHT duration, presence of testes or psychiatric medication use.

Breast growth

Of the 108 confident survey participants, 106 reported breast growth, 79 reported body hair changes, and 82 reported muscle mass changes (Table 4.45). The one participant taking the antiandrogen only FHT regimen reported no breast growth and one of the 38 participants in the estrogen plus progesterone plus antiandrogen FHT regimen group also reported no breast growth (Table 4.46). Of the 106 participants reporting breast growth 49 were satisfied, 32 were somewhat satisfied, seven were neither satisfied nor unsatisfied, 13 were somewhat unsatisfied and five were unsatisfied with the growth results.

Body hair changes

Of the 79 participants reporting body hair amount changes, no participants indicated an increase in body hair amount (Table 4.48), 33 participants reported a decrease in body hair amount by half or more, 44 participants reported a slight decrease, and two participants indicated no change. For body hair texture changes two participants reported their body hair as much more coarse and thick, seven participants reported no change, 33 participants reported body hair was slightly softer/thinner and 37 participants reported their body hair was much softer/thinner (Table 4.49). Satisfaction with body hair amount changes in the 79 participants reporting changes did not vary across FHT regimens (Table 4.50), with 31 participants reporting being satisfied, 33 participants reporting being somewhat satisfied, three participants reporting being neither satisfied nor dissatisfied, eight participants reporting being unsatisfied, and four participants reporting being unsatisfied. Similarly, satisfaction with body hair texture changes in the 79 participants reporting changes did not vary across FHT regimens (Table 4.51), with 39 participants reporting being satisfied, 26 reporting being somewhat satisfied, eight reporting being neither satisfied nor dissatisfied, four reporting being unsatisfied, and two reporting being unsatisfied.

Table 4.45. The frequency at which the 108 confident[1] participants experience breast growth, body hair changes, and muscle mass changes, grouped by feminizing hormone therapy (FHT) regimen.

Result		Breast growth		Body hair changes		Muscle mass changes	
Regimen	n[2]	n	%[3]	n	%[3]	n	%[3]
Estrogen only	16	16	100	12	75	10	63
Antiandrogen only	1	0	0	0	0	0	0
Estrogen + Progesterone	23	23	100	19	83	21	91
Estrogen + Antiandrogen	28	28	100	19	68	17	61
Estrogen + Testosterone	1	1	100	1	100	1	100
Estrogen + Progesterone + Antiandrogen	38	37	97	27	71	32	84
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	1	100	1	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Total confident participants using the given FHT regimen.
[3]As a percentage of confident participants using the given FHT regimen.

Table 4.46. The satisfaction with breast growth among the 108 confident[1] participants as grouped by their feminizing hormone therapy (FHT) regimens.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	16	100	Satisfied	8	50
				Somewhat satisfied	4	25
				Neither satisfied nor unsatisfied	1	6
				Somewhat unsatisfied	3	19
				Unsatisfied	0	0
Antiandrogen only	1	0	0	Not applicable – no breast growth reported		
Estrogen + Progesterone	23	23	100	Satisfied	13	57
				Somewhat satisfied	8	35
				Neither satisfied nor unsatisfied	1	4
				Somewhat unsatisfied	1	4
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	28	100	Satisfied	11	39
				Somewhat satisfied	11	39
				Neither satisfied nor unsatisfied	2	7
				Somewhat unsatisfied	2	7
				Unsatisfied	2	7
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	100
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	37	97	Satisfied	17	46
				Somewhat satisfied	8	22
				Neither satisfied nor unsatisfied	3	8
				Somewhat unsatisfied	6	16
				Unsatisfied	3	8
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing breast growth.
[4]The percentage of confident participants using the given regimen who reported experiencing breast growth out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported the given satisfaction level with their breast growth.
[6]The percentage of confident participants using the given regimen who reported the given satisfaction level with their breast growth out of the number of confident participants using the given regimen who reported breast growth.

Table 4.47. How satisfied with their breast growth, as grouped length of time using feminizing hormone therapy (FHT), the 106 confident[1] participants who reported experiencing breast growth were.

FHT time[2]	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	3	100	Satisfied	2	67
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	7	100	Satisfied	3	43
				Somewhat satisfied	2	29
				Neither satisfied nor unsatisfied	1	14
				Somewhat unsatisfied	1	14
				Unsatisfied	0	0
6 months to < 1 year	11	11	100	Satisfied	4	36
				Somewhat satisfied	3	27
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	2	18
				Unsatisfied	2	18
1 year to < 5 years	66	65	98	Satisfied	32	49
				Somewhat satisfied	19	29
				Neither satisfied nor unsatisfied	5	8
				Somewhat unsatisfied	6	9
				Unsatisfied	3	5
5 years to < 10 years	16	16	100	Satisfied	8	50
				Somewhat satisfied	4	25
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	4	25
				Unsatisfied	0	0
10 or more years	4	4	100	Satisfied	0	0
				Somewhat satisfied	4	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing breast growth.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing breast growth out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their breast growth.
[7]As a percentage of the number of participants reporting breast changes with having used FHT for the given time.

Table 4.48. How the amount of body hair changed due to feminizing hormone therapy (FHT), as grouped by FHT regimen, among the 79 confident[1] participants who reported experiencing body hair changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	12	75	Decreased by half or more	6	50
				Decreased slightly	6	50
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
Antiandrogen only	1	0	0	No body hair change reported		
Estrogen + Progesterone	23	19	83	Decreased by half or more	6	32
				Decreased slightly	13	68
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
Estrogen + Antiandrogen	28	19	68	Decreased by half or more	6	32
				Decreased slightly	11	58
				No change	2	11
				Increased slightly	0	-
				Doubled or more than doubled	0	-
Estrogen + Testosterone	1	1	100	Decreased by half or more	1	100
				Decreased slightly	0	0
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
Estrogen + Progesterone + Antiandrogen	38	27	71	Decreased by half or more	14	52
				Decreased slightly	13	48
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Decreased by half or more	0	0
				Decreased slightly	1	100
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing body hair changes.
[4]The percentage of confident participants using the given regimen who reported experiencing body hair changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their body hair amount changing by the given proportion.
[6]As a percentage of participants in a given FHT regimen reporting body hair amount changes.

Table 4.49. How the texture of body hair changed due to feminizing hormone therapy (FHT), as grouped by FHT regimen, among the 79 confident[1] participants who reported experiencing body hair changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	12	75	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	2	17
				Slightly softer/thinner	1	8
				Much softer/thinner	9	75
Antiandrogen only	1	0	0	No body hair change reported		
Estrogen + Progesterone	23	19	83	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	2	11
				Slightly softer/thinner	7	37
				Much softer/thinner	10	53
Estrogen + Antiandrogen	28	19	68	Much more coarse/thick	1	5
				Slightly coarser/thicker	0	-
				No change	3	16
				Slightly softer/thinner	7	37
				Much softer/thinner	8	42
Estrogen + Testosterone	1	1	100	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	0	0
				Slightly softer/thinner	1	100
				Much softer/thinner	0	0
Estrogen + Progesterone + Antiandrogen	38	27	71	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	0	0
				Slightly softer/thinner	17	63
				Much softer/thinner	10	37
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Much more coarse/thick	1	100
				Slightly coarser/thicker	0	-
				No change	0	0
				Slightly softer/thinner	0	0
				Much softer/thinner	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing body hair changes.
[4]The percentage of confident participants using the given regimen who reported experiencing body hair changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their body hair texture changing by the given type.
[6]As a percentage of participants in a given FHT regimen reporting body hair texture changes.

Table 4.50. How satisfied with their body hair amount changes, as grouped by feminizing hormone therapy (FHT) regimen, the 79 confident[1] participants who reported experiencing body hair changes were.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	12	75	Satisfied	8	67
				Somewhat satisfied	3	25
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	8
				Unsatisfied	0	0
Antiandrogen only	1	0	0	No body hair change reported		
Estrogen + Progesterone	23	19	83	Satisfied	9	47
				Somewhat satisfied	8	42
				Neither satisfied nor unsatisfied	1	5
				Somewhat unsatisfied	1	5
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	19	68	Satisfied	5	26
				Somewhat satisfied	8	42
				Neither satisfied nor unsatisfied	1	5
				Somewhat unsatisfied	3	16
				Unsatisfied	2	11
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	27	71	Satisfied	9	33
				Somewhat satisfied	12	44
				Neither satisfied nor unsatisfied	1	4
				Somewhat unsatisfied	3	11
				Unsatisfied	2	7
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing body hair changes.
[4]The percentage of confident participants using the given regimen who reported experiencing body hair changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their body hair amount changes.
[6]As a percentage of participants in a given FHT regimen reporting body hair amount changes.

Table 4.51. How satisfied with their body hair texture changes, as grouped by feminizing hormone therapy (FHT) regimen, the 79 confident[1] participants who reported experiencing body hair changes were.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	12	75	Satisfied	9	75
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	2	17
				Somewhat unsatisfied	1	8
				Unsatisfied	0	0
Antiandrogen only	1	0	0	No body hair change reported		
Estrogen + Progesterone	23	19	83	Satisfied	12	63
				Somewhat satisfied	6	32
				Neither satisfied nor unsatisfied	1	5
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	19	68	Satisfied	7	37
				Somewhat satisfied	7	37
				Neither satisfied nor unsatisfied	2	11
				Somewhat unsatisfied	1	5
				Unsatisfied	2	11
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	27	71	Satisfied	11	41
				Somewhat satisfied	12	44
				Neither satisfied nor unsatisfied	2	7
				Somewhat unsatisfied	2	7
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] The number of confident participants using the given regimen.
[3] The number of confident participants using the given regimen who reported experiencing body hair changes.
[4] The percentage of confident participants using the given regimen who reported experiencing body hair changes out of the total confident participants using the given regimen.
[5] The number of confident participants using the given regimen who were the given satisfaction level with their body hair texture changes.
[6] As a percentage of participants in a given FHT regimen reporting body hair texture changes.

The duration that participants had been taking FHT medications did not significantly alter reported body hair amount changes (Table 4.52), texture changes (Table 4.53), or satisfaction with body hair amount (Table 4.54) or texture changes (Table 4.55), but the amount of participants experiencing each result increased with length of time taking FHT ($P = 0.0044$).

Muscle mass changes

The 82 participants reporting changes in upper body muscle mass were distributed across six of the seven FHT regimens with the participant taking only antiandrogens reporting no changes in upper body muscle mass (Table 4.56). Participants taking FHT regimens containing progesterone were more likely ($P = 0.0027$) to experience upper body muscle mass changes than those taking FHT regimens that did not contain progesterone. Of the 82 participants reporting changes in upper body muscle mass, one participant reported becoming much more muscular, three reported no change, 46 reported being slightly less muscular, and 32 reported being much less muscular.

Similarly, changes in lower body mass were reported in all of the FHT regimens except for the antiandrogen only regimen (Table 5.57). There was no significant difference between changes in lower body muscle mass based on FHT regimen. Of the 82 participants reporting changes in lower body muscle mass, five reported being slightly more muscular, 27 reported no change, 38 reported being slightly less muscular, and 12 reported being much less muscular. Thus, participants reporting muscle mass changes were more likely to decrease in upper body muscle mass than lower body muscle mass ($P < 0.0001$). No one reported being unsatisfied with their muscle mass changes in any of the FHT regimens (Table 4.58). Overall, of the 82 participants reporting muscle mass changes, 26 of them were satisfied, 24 were somewhat satisfied, 27 were neither satisfied nor unsatisfied and one was somewhat unsatisfied.

Table 4.52. How the amount of body hair changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 79 confident[1] participants who reported experiencing body hair changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	0	0	No body hair change reported		
3 to < 6 months	7	2	29	Decreased by half or more	0	0
				Decreased slightly	2	100
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
6 months to < 1 year	11	9	82	Decreased by half or more	2	22
				Decreased slightly	5	56
				No change	2	22
				Increased slightly	0	-
				Doubled or more than doubled	0	-
1 year to < 5 years	66	52	79	Decreased by half or more	20	38
				Decreased slightly	32	62
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
5 years to < 10 years	16	13	81	Decreased by half or more	8	62
				Decreased slightly	5	38
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-
10 or more years	4	3	75	Decreased by half or more	3	100
				Decreased slightly	0	0
				No change	0	0
				Increased slightly	0	-
				Doubled or more than doubled	0	-

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing body hair changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing body hair changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their body hair amount changing by the given proportion.
[7]As a percentage of participants in a given FHT duration reporting body hair amount changes.

Table 4.53. How the texture of body hair changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 79 confident[1] participants who reported experiencing body hair changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	0	0	No body hair change reported		
3 to < 6 months	7	2	29	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	0	0
				Slightly softer/thinner	1	50
				Much softer/thinner	1	50
6 months to < 1 year	11	9	82	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	2	22
				Slightly softer/thinner	4	44
				Much softer/thinner	3	33
1 year to < 5 years	66	52	79	Much more coarse/thick	1	2
				Slightly coarser/thicker	0	-
				No change	5	10
				Slightly softer/thinner	26	50
				Much softer/thinner	20	38
5 years to < 10 years	16	13	81	Much more coarse/thick	1	8
				Slightly coarser/thicker	0	-
				No change	0	0
				Slightly softer/thinner	2	15
				Much softer/thinner	10	77
10 or more years	4	3	75	Much more coarse/thick	0	0
				Slightly coarser/thicker	0	-
				No change	0	0
				Slightly softer/thinner	0	0
				Much softer/thinner	3	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing body hair changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing body hair changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their body hair texture changing by the given type.
[7]As a percentage of participants in a given FHT duration reporting body hair texture.

Table 4.54. How satisfied with their body hair amount changes, as grouped length of time[2] using feminizing hormone therapy (FHT), the 79 confident[1] participants who reported experiencing body hair changes were.

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	0	0	No body hair change reported		
3 to < 6 months	7	2	29	Satisfied	1	50
				Somewhat satisfied	1	50
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
6 months to < 1 year	11	9	82	Satisfied	2	22
				Somewhat satisfied	4	44
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	2	22
				Unsatisfied	1	11
1 year to < 5 years	66	52	79	Satisfied	18	35
				Somewhat satisfied	22	42
				Neither satisfied nor unsatisfied	3	6
				Somewhat unsatisfied	6	12
				Unsatisfied	3	6
5 years to < 10 years	16	13	81	Satisfied	7	54
				Somewhat satisfied	6	46
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
10 or more years	4	3	75	Satisfied	3	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing body hair changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing body hair changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their body hair amount changes.
[7]As a percentage of participants in a given FHT duration reporting body hair amount changes.

Table 4.55. How satisfied with their body hair texture changes, as grouped length of time[2] using feminizing hormone therapy (FHT), the 79 confident[1] participants who reported experiencing body hair changes were.

FHT time	*n*[3]	*n*[4]	%[5]	Satisfaction	*n*[6]	%[7]
< 3 months	3	0	0	No body hair change reported		
3 to < 6 months	7	2	29	Satisfied	1	50
				Somewhat satisfied	1	50
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
6 months to < 1 year	11	9	82	Satisfied	4	44
				Somewhat satisfied	2	22
				Neither satisfied nor unsatisfied	1	11
				Somewhat unsatisfied	0	0
				Unsatisfied	2	22
1 year to < 5 years	66	52	79	Satisfied	22	42
				Somewhat satisfied	20	38
				Neither satisfied nor unsatisfied	6	12
				Somewhat unsatisfied	4	8
				Unsatisfied	0	0
5 years to < 10 years	16	13	81	Satisfied	9	69
				Somewhat satisfied	4	31
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
10 or more years	4	3	75	Satisfied	3	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants having used FHT for the given time.
[3]The number of confident participants having used FHT for the given time who reported experiencing body hair changes.
[4]The percentage of confident participants having used FHT for the given time who reported experiencing body hair changes out of the total confident participants having used FHT for the given time.
[5]The number of confident participants having used FHT for the given time who were the given satisfaction level with their body hair texture changes.
[6]The percentage of confident participants having used FHT for the given time who were the given satisfaction level with their body hair texture changes out of the total confident participants who reported being the given satisfaction level with their body hair texture changes.
[7]As a percentage of participants in a given FHT duration reporting body hair texture changes.

Table 4.56. How the upper body muscle mass changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 82 confident[1] participants who reported experiencing muscle mass change.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	10	63	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	4	40
				Much less muscular	6	60
Antiandrogen only	1	0	0	No muscle mass change reported		
Estrogen + Progesterone	23	21	91	Much more muscular	1	5
				Slightly more muscular	0	-
				No change	1	5
				Slightly less muscular	12	57
				Much less muscular	7	33
Estrogen + Antiandrogen	28	17	61	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	12	71
				Much less muscular	5	29
Estrogen + Testosterone	1	1	100	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	0	0
				Much less muscular	1	100
Estrogen + Progesterone + Antiandrogen	38	32	84	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	1	3
				Slightly less muscular	18	56
				Much less muscular	13	41
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	1	100
				Slightly less muscular	0	0
				Much less muscular	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing muscle mass changes.
[4]The percentage of confident participants using the given regimen who reported experiencing muscle mass changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their upper body muscle mass changing by the given amount.
[6]As a percentage of participants in a given FHT regimen reporting muscle mass changes.

Table 4.57. How the lower body muscle mass changed, as grouped by feminizing hormone therapy (FHT) regimen, of the 82 confident[1] participants who reported experiencing muscle mass changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	10	63	Much more muscular	0	-
				Slightly more muscular	0	0
				No change	1	10
				Slightly less muscular	4	40
				Much less muscular	5	50
Antiandrogen only	1	0	0	No muscle mass change reported		
Estrogen + Progesterone	23	21	91	Much more muscular	0	-
				Slightly more muscular	2	10
				No change	9	43
				Slightly less muscular	8	38
				Much less muscular	2	10
Estrogen + Antiandrogen	28	17	61	Much more muscular	0	-
				Slightly more muscular	0	0
				No change	5	29
				Slightly less muscular	10	59
				Much less muscular	2	12
Estrogen + Testosterone	1	1	100	Much more muscular	0	-
				Slightly more muscular	0	0
				No change	1	100
				Slightly less muscular	0	0
				Much less muscular	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	Much more muscular	0	-
				Slightly more muscular	2	6
				No change	11	34
				Slightly less muscular	16	50
				Much less muscular	3	9
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Much more muscular	0	-
				Slightly more muscular	1	100
				No change	0	0
				Slightly less muscular	0	0
				Much less muscular	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing muscle mass changes.
[4]The percentage of confident participants using the given regimen who reported experiencing muscle mass changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their lower body muscle mass changing by the given amount.
[6]As a percentage of participants in a given FHT regimen reporting muscle mass changes.

Table 4.58. How satisfied the 82 confident[1] participants who reported experiencing muscle mass changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	*n*[2]	*n*[3]	%[4]	Satisfaction	*n*[5]	%[6]
Estrogen only	16	10	63	Satisfied	2	20
				Somewhat satisfied	4	40
				Neither satisfied nor unsatisfied	3	30
				Somewhat unsatisfied	1	10
				Unsatisfied	0	0
Antiandrogen only	1	0	0	No muscle mass change reported		
Estrogen + Progesterone	23	21	91	Satisfied	7	33
				Somewhat satisfied	8	38
				Neither satisfied nor unsatisfied	5	24
				Somewhat unsatisfied	1	5
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	17	61	Satisfied	3	18
				Somewhat satisfied	4	24
				Neither satisfied nor unsatisfied	9	53
				Somewhat unsatisfied	1	6
				Unsatisfied	0	-
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	Satisfied	14	44
				Somewhat satisfied	7	22
				Neither satisfied nor unsatisfied	10	31
				Somewhat unsatisfied	1	3
				Unsatisfied	0	-
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	100
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing muscle mass changes.
[4]The percentage of confident participants using the given regimen who reported experiencing muscle mass changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their muscle mass changes.
[6]As a percentage of participants in a given FHT regimen reporting muscle mass changes.

Those using FHT for longer than one year were more likely (P = 0.0014) to report a reduction in upper body muscle mass (Table 4.59), but not lower body muscle mass (Table 4.60) or with satisfaction with muscle mass changes (Table 4.61).

Genitalia changes

Of the 108 confident survey participants 91 reported ejaculate volume changes, 94 reported erection frequency changes and 61 reported erectile volume changes (Table 4.62). Participants in all the FHT regimens reported erectile volume changes (Table 4.63), with 19 participants reporting that ejaculate volume dropped to zero, 46 participants reporting that it dropped significantly to near zero, 24 participants reporting a reduction, one participant reporting no change and one participant reporting an increase in ejaculate volume. Overall, 43 participants were satisfied with the ejaculate volume changes, 13 participants were somewhat satisfied, 27 were neither satisfied nor unsatisfied, three were somewhat unsatisfied and five were unsatisfied (Table 4.64). The duration that participants had been using FHT did not significantly affect ejaculatory volume (Table 4.65) or satisfaction with changes in ejaculatory volume (Table 4.66).

The 94 participants that reported erection frequency changes were distributed across all seven FHT regimens (Table 4.67). Overall, no participants reported an increase in erection frequency, one participant reported no change in frequency, 77 participants reported a decrease in frequency, and 16 participants reported erection frequency had dropped to zero. Satisfaction with changes in erection frequency was also unaffected by FHT regimen (Table 4.68). Overall, 40 participants were satisfied with their erection frequency changes, 34 participants were somewhat satisfied, 14 participants were neither satisfied nor unsatisfied, no one was somewhat unsatisfied, and six participants reported being unsatisfied. The duration participants had been receiving FHT did not affect erection frequency (Table 4.69) or satisfaction with erection frequency (Table 4.70).

Table 4.59. How the upper body muscle mass changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 82 confident[1] participants who reported experiencing muscle mass.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	1	33	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	1	100
				Much less muscular	0	0
3 to < 6 months	7	3	43	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	3	100
				Much less muscular	0	0
6 months to < 1 year	11	5	45	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	3	60
				Much less muscular	2	40
1 year to < 5 years	66	55	83	Much more muscular	1	2
				Slightly more muscular	0	-
				No change	2	4
				Slightly less muscular	32	58
				Much less muscular	20	36
5 years to < 10 years	16	14	88	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	1	7
				Slightly less muscular	6	43
				Much less muscular	7	50
10 or more years	4	4	100	Much more muscular	0	0
				Slightly more muscular	0	-
				No change	0	0
				Slightly less muscular	1	25
				Much less muscular	3	75

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing muscle mass changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing muscle mass changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their upper body muscle mass changing by the given amount.
[7]As a percentage of participants for a given FHT regimen duration reporting muscle mass changes.

Table 4.60. How the lower body muscle mass changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 82 confident[1] participants who reported experiencing muscle mass changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	1	33	Much more muscular	0	0
				Slightly more muscular	0	0
				No change	0	0
				Slightly less muscular	1	100
				Much less muscular	0	0
3 to < 6 months	7	3	43	Much more muscular	0	0
				Slightly more muscular	0	0
				No change	1	33
				Slightly less muscular	2	67
				Much less muscular	0	0
6 months to < 1 year	11	5	45	Much more muscular	0	0
				Slightly more muscular	0	0
				No change	2	40
				Slightly less muscular	2	40
				Much less muscular	1	20
1 year to < 5 years	66	55	83	Much more muscular	0	0
				Slightly more muscular	4	7
				No change	21	38
				Slightly less muscular	26	47
				Much less muscular	4	7
5 years to < 10 years	16	14	88	Much more muscular	0	0
				Slightly more muscular	1	7
				No change	3	21
				Slightly less muscular	6	43
				Much less muscular	4	29
10 or more years	4	4	100	Much more muscular	0	0
				Slightly more muscular	0	0
				No change	0	0
				Slightly less muscular	1	25
				Much less muscular	3	75

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing muscle mass changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing muscle mass changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their lower body muscle mass changing by the given amount.
[7]As a percentage of participants for a given FHT regimen duration reporting muscle mass changes.

Table 4.61. How satisfied the 82 confident[1] participants who reported experiencing muscle mass changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	1	33	Satisfied	1	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	3	43	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	3	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
6 months to < 1 year	11	5	45	Satisfied	1	20
				Somewhat satisfied	2	40
				Neither satisfied nor unsatisfied	2	40
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
1 year to < 5 years	66	55	83	Satisfied	21	38
				Somewhat satisfied	15	27
				Neither satisfied nor unsatisfied	16	29
				Somewhat unsatisfied	3	5
				Unsatisfied	0	0
5 years to < 10 years	16	14	88	Satisfied	3	21
				Somewhat satisfied	4	29
				Neither satisfied nor unsatisfied	5	36
				Somewhat unsatisfied	2	14
				Unsatisfied	0	0
10 or more years	4	4	100	Satisfied	0	0
				Somewhat satisfied	3	75
				Neither satisfied nor unsatisfied	1	25
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3] The number of confident participants having used FHT for the given time.
[4] The number of confident participants having used FHT for the given time who reported experiencing muscle mass changes.
[5] The percentage of confident participants having used FHT for the given time who reported experiencing muscle mass changes out of the total confident participants having used FHT for the given time.
[6] The number of confident participants having used FHT for the given time who were the given satisfaction level with their muscle mass changes.
[7]As a percentage of participants for a given FHT regimen duration reporting muscle mass changes.

Table 4.62. The frequency at which the 108 confident[1] participants experience genital changes, grouped according to feminizing hormone therapy (FHT) regimen.

Result		Ejaculate volume changes		Erection frequency changes		Maximum erectile volume changes	
Regimen	n[2]	n	%[3]	n	%[3]	n	%[3]
Estrogen only	16	12	75	12	75	10	63
Antiandrogen only	1	1	100	1	100	1	100
Estrogen + Progesterone	23	22	96	22	96	14	61
Estrogen + Antiandrogen	28	22	79	25	89	14	50
Estrogen + Testosterone	1	1	100	1	100	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	32	84	22	58
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	1	100	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] Total confident participants using the given FHT regimen.
[3] As a percentage of confident participants using the given FHT regimen.

Table 4.63. How the ejaculate volume changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 91 confident[1] participants who reported experiencing ejaculate volume changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	12	75	Dropped to zero	4	33
				Dropped significantly, to near zero	6	50
				Been reduced	2	17
				No change	0	0
				Has increased	0	0
Antiandrogen only	1	1	100	Dropped to zero	0	0
				Dropped significantly, to near zero	0	0
				Been reduced	1	100
				No change	0	0
				Has increased	0	0
Estrogen + Progesterone	23	22	96	Dropped to zero	3	14
				Dropped significantly, to near zero	12	55
				Been reduced	5	23
				No change	1	5
				Has increased	1	5
Estrogen + Antiandrogen	28	22	79	Dropped to zero	4	18
				Dropped significantly, to near zero	8	36
				Been reduced	10	45
				No change	0	0
				Has increased	0	0
Estrogen + Testosterone	1	1	100	Dropped to zero	1	100
				Dropped significantly, to near zero	0	0
				Been reduced	0	0
				No change	0	0
				Has increased	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	Dropped to zero	7	22
				Dropped significantly, to near zero	19	59
				Been reduced	6	19
				No change	0	0
				Has increased	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Dropped to zero	0	0
				Dropped significantly, to near zero	1	100
				Been reduced	0	0
				No change	0	0
				Has increased	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing ejaculate volume changes.
[4]The percentage of confident participants using the given regimen who reported experiencing ejaculate volume changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their ejaculate volume changing by the given amount.
[6]As a percentage of the participants in a given FHT regimen experiencing ejaculate volume changes.

Table 4.64. How satisfied the 91 confident[1] participants who reported experiencing ejaculate volume changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	12	75	Satisfied	6	50
				Somewhat satisfied	1	8
				Neither satisfied nor unsatisfied	4	33
				Somewhat unsatisfied	0	0
				Unsatisfied	1	8
Antiandrogen only	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone	23	22	96	Satisfied	12	55
				Somewhat satisfied	3	14
				Neither satisfied nor unsatisfied	4	18
				Somewhat unsatisfied	2	9
				Unsatisfied	1	5
Estrogen + Antiandrogen	28	22	79	Satisfied	10	45
				Somewhat satisfied	4	18
				Neither satisfied nor unsatisfied	6	27
				Somewhat unsatisfied	1	5
				Unsatisfied	1	5
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	Satisfied	15	47
				Somewhat satisfied	5	16
				Neither satisfied nor unsatisfied	10	31
				Somewhat unsatisfied	0	0
				Unsatisfied	2	6
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing ejaculate volume changes.
[4]The percentage of confident participants using the given regimen who reported experiencing ejaculate volume changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their ejaculate volume changes.
[6]As a percentage of the participants in a given FHT regimen experiencing ejaculate volume changes.

Table 4.65. How the ejaculate volume changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 91 confident[1] participants who reported experiencing ejaculate volume changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	1	33	Dropped to zero	0	0
				Dropped significantly, to near zero	0	0
				Been reduced	1	100
				No change	0	0
				Has increased	0	0
3 to < 6 months	7	7	100	Dropped to zero	3	43
				Dropped significantly, to near zero	0	0
				Been reduced	4	57
				No change	0	0
				Has increased	0	0
6 months to < 1 year	11	9	82	Dropped to zero	0	0
				Dropped significantly, to near zero	4	44
				Been reduced	5	56
				No change	0	0
				Has increased	0	0
1 year to < 5 years	66	57	86	Dropped to zero	9	16
				Dropped significantly, to near zero	33	58
				Been reduced	13	23
				No change	1	2
				Has increased	1	2
5 years to < 10 years	16	13	81	Dropped to zero	4	31
				Dropped significantly, to near zero	9	69
				Been reduced	0	0
				No change	0	0
				Has increased	0	0
10 or more years	4	3	75	Dropped to zero	3	100
				Dropped significantly, to near zero	0	0
				Been reduced	0	0
				No change	0	0
				Has increased	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing ejaculate volume changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing ejaculate volume changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their ejaculate volume changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing ejaculate volume changes.

Table 4.66. How satisfied the 91 confident[1] participants who reported experiencing ejaculate volume changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	1	33	Satisfied	1	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	7	100	Satisfied	3	43
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	3	44
				Somewhat unsatisfied	1	14
				Unsatisfied	0	0
6 months to < 1 year	11	9	82	Satisfied	2	22
				Somewhat satisfied	1	11
				Neither satisfied nor unsatisfied	6	67
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
1 year to < 5 years	66	57	86	Satisfied	30	53
				Somewhat satisfied	8	14
				Neither satisfied nor unsatisfied	13	23
				Somewhat unsatisfied	1	2
				Unsatisfied	5	9
5 years to < 10 years	16	13	81	Satisfied	6	46
				Somewhat satisfied	4	31
				Neither satisfied nor unsatisfied	2	15
				Somewhat unsatisfied	1	8
				Unsatisfied	0	0
10 or more years	4	3	75	Satisfied	1	33
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	2	67
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing ejaculate volume changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing ejaculate volume changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their ejaculate volume changes.
[7]As a percentage of the participants for a given FHT duration experiencing ejaculate volume changes.

Table 4.67. How the erection frequency changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 94 confident[1] participants who reported experiencing erection frequency.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	12	75	Dropped to zero	4	33
				Decreased	8	67
				No change	0	0
				Increased	0	-
				Greatly increased	0	-
Antiandrogen only	1	1	100	Dropped to zero	0	0
				Decreased	1	100
				No change	0	0
				Increased	0	-
				Greatly increased	0	-
Estrogen + Progesterone	23	22	96	Dropped to zero	4	18
				Decreased	17	77
				No change	1	5
				Increased	0	-
				Greatly increased	0	-
Estrogen + Antiandrogen	28	25	89	Dropped to zero	3	12
				Decreased	22	88
				No change	0	0
				Increased	0	-
				Greatly increased	0	-
Estrogen + Testosterone	1	1	100	Dropped to zero	1	100
				Decreased	0	0
				No change	0	0
				Increased	0	-
				Greatly increased	0	-
Estrogen + Progesterone + Antiandrogen	38	32	84	Dropped to zero	4	13
				Decreased	28	88
				No change	0	0
				Increased	0	-
				Greatly increased	0	-
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Dropped to zero	0	0
				Decreased	1	100
				No change	0	0
				Increased	0	-
				Greatly increased	0	-

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing erection frequency changes.
[4]The percentage of confident participants using the given regimen who reported experiencing erection frequency changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their erection frequency changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing erection frequency changes.

Table 4.68. How satisfied the 94 confident[1] participants who reported experiencing erection frequency changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	12	75	Satisfied	6	50
				Somewhat satisfied	3	25
				Neither satisfied nor unsatisfied	3	25
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Antiandrogen only	1	1	100	Satisfied	1	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone	23	22	96	Satisfied	10	45
				Somewhat satisfied	8	36
				Neither satisfied nor unsatisfied	3	14
				Somewhat unsatisfied	0	0
				Unsatisfied	1	5
Estrogen + Antiandrogen	28	25	89	Satisfied	8	32
				Somewhat satisfied	11	44
				Neither satisfied nor unsatisfied	3	12
				Somewhat unsatisfied	0	0
				Unsatisfied	3	12
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	Satisfied	15	47
				Somewhat satisfied	11	34
				Neither satisfied nor unsatisfied	4	13
				Somewhat unsatisfied	0	0
				Unsatisfied	2	6
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing erection frequency changes.
[4]The percentage of confident participants using the given regimen who reported experiencing erection frequency changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their erection frequency changes.
[6]As a percentage of the participants for a given FHT regimen experiencing erection frequency changes.

Table 4.69. How erection frequency changed, as grouped by length of time[2] using feminizing hormone therapy (FHT), among the 94 confident[1] participants who reported experiencing erection frequency changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	3	100	Dropped to zero	1	33
				Decreased	2	67
				No change	0	0
				Increased	0	0
				Greatly increased	0	0
3 to < 6 months	7	6	86	Dropped to zero	1	17
				Decreased	5	83
				No change	0	0
				Increased	0	0
				Greatly increased	0	0
6 months to < 1 year	11	9	82	Dropped to zero	0	0
				Decreased	9	100
				No change	0	0
				Increased	0	0
				Greatly increased	0	0
1 year to < 5 years	66	60	91	Dropped to zero	9	15
				Decreased	50	83
				No change	1	2
				Increased	0	0
				Greatly increased	0	0
5 years to < 10 years	16	12	75	Dropped to zero	2	17
				Decreased	10	83
				No change	0	0
				Increased	0	0
				Greatly increased	0	0
10 or more years	4	3	75	Dropped to zero	3	100
				Decreased	0	0
				No change	0	0
				Increased	0	0
				Greatly increased	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing erection frequency changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing erection frequency changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their erection frequency changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing erection frequency changes.

Table 4.70. How satisfied the 94 confident[1] participants who reported experiencing erection frequency changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	3	100	Satisfied	1	33
				Somewhat satisfied	1	33
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	6	86	Satisfied	3	50
				Somewhat satisfied	1	17
				Neither satisfied nor unsatisfied	2	33
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
6 months to < 1 year	11	9	82	Satisfied	2	22
				Somewhat satisfied	3	33
				Neither satisfied nor unsatisfied	3	33
				Somewhat unsatisfied	0	0
				Unsatisfied	1	11
1 year to < 5 years	66	60	91	Satisfied	27	45
				Somewhat satisfied	23	38
				Neither satisfied nor unsatisfied	5	8
				Somewhat unsatisfied	0	0
				Unsatisfied	5	8
5 years to < 10 years	16	12	75	Satisfied	5	42
				Somewhat satisfied	5	42
				Neither satisfied nor unsatisfied	2	17
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
10 or more years	4	3	75	Satisfied	1	33
				Somewhat satisfied	1	33
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3] The number of confident participants having used FHT for the given time.
[4] The number of confident participants having used FHT for the given time who reported experiencing erection frequency changes.
[5] The percentage of confident participants having used FHT for the given time who reported experiencing erection frequency changes out of the total confident participants having used FHT for the given time.
[6] The number of confident participants having used FHT for the given time who were the given satisfaction level with their erection frequency changes.
[7]As a percentage of the participants for a given FHT duration experiencing erection frequency changes.

Of the 108 confident survey participants, 61 reported changes in maximum erectile volume and of these 61 participants, 59 reported a decrease in volume while two reported no change despite initially selecting that their maximum erection volume changed (Table 4.71). Overall, 24 participants were satisfied with the changes in maximum erectile volume, while 12 participants were somewhat satisfied, 17 participants were neither satisfied nor unsatisfied, two participants were somewhat unsatisfied, and six were unsatisfied (Table 4.72). The duration participants had been receiving FHT did not affect maximum erection volume (Table 4.73) or satisfaction (Table 4.74) with maximum erection volume.

Changes in body fat, facial hair and skin texture

Of the 108 confident survey participants, 88 reported changes in fat redistribution, 52 reported facial hair changes and 96 reported skin texture changes (Table 4.75). For the 88 participants that reported changes in the redistribution of fat, 52 of them reported changes in belly fat, 80 of them reported changes in hip and buttock fat, 57 of them reported changes in face and neck fat, and 55 reported changes in arm and chest fat (Table 4.76). Body fat redistribution was reported by participants in five of the seven FHT regimens (Table 4.76) and for all FHT time durations (Table 4.77).

Those using FHT regimens containing progesterone were more likely ($P = 0.0234$) to report changes to their fat distribution than those using FHT regimens without progesterone as a component. More specifically, of those participants who reported any body fat changes, participants using FHT regimens containing progesterone as a component were more likely ($P = 0.0002$) to report changes to their hips and buttocks fat distribution than those without progesterone as a component of their FHT.

Table 4.71. How maximum erectile volume changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 61 confident[1] participants who reported experiencing maximum erectile volume changes.

Regimen	n[2]	n[3]	%[4]	Volume change	n[5]	%[6]
Estrogen only	16	10	63	Increased	0	0
				Remained the same	0	0
				Decreased	10	100
Antiandrogen only	1	1	100	Increased	0	0
				Remained the same	0	0
				Decreased	1	100
Estrogen + Progesterone	23	14	61	Increased	0	0
				Remained the same	0	0
				Decreased	14	100
Estrogen + Antiandrogen	28	14	50	Increased	0	0
				Remained the same	1	7
				Decreased	13	93
Estrogen + Testosterone	1	0	0	No erectile volume change reported		
Estrogen + Progesterone + Antiandrogen	38	22	58	Increased	0	0
				Remained the same	1	5
				Decreased	21	95
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No erectile volume change reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing maximum erectile volume changes.
[4]The percentage of confident participants using the given regimen who reported experiencing maximum erectile volume changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their maximum erectile volume changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing erection volume changes.

Table 4.72. How satisfied the 61 confident[1] participants who reported experiencing maximum erectile volume changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	10	63	Satisfied	5	50
				Somewhat satisfied	2	20
				Neither satisfied nor unsatisfied	1	10
				Somewhat unsatisfied	1	10
				Unsatisfied	1	10
Antiandrogen only	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone	23	14	61	Satisfied	3	21
				Somewhat satisfied	4	29
				Neither satisfied nor unsatisfied	5	36
				Somewhat unsatisfied	0	0
				Unsatisfied	2	14
Estrogen + Antiandrogen	28	14	50	Satisfied	5	36
				Somewhat satisfied	3	21
				Neither satisfied nor unsatisfied	5	36
				Somewhat unsatisfied	0	0
				Unsatisfied	1	7
Estrogen + Testosterone	1	0	0	No erectile volume change reported		
Estrogen + Progesterone + Antiandrogen	38	22	58	Satisfied	11	50
				Somewhat satisfied	3	14
				Neither satisfied nor unsatisfied	5	23
				Somewhat unsatisfied	1	5
				Unsatisfied	2	9
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No erectile volume change reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing maximum erectile volume changes.
[4]The percentage of confident participants using the given regimen who reported experiencing maximum erectile volume changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their maximum erectile volume changes.
[6]As a percentage of the participants for a given FHT regimen experiencing erection volume changes.

Table 4.73. How maximum erectile volume changed, as grouped length of time using feminizing hormone therapy (FHT), among the 61 confident[1] participants who reported experiencing maximum erectile volume changes.

FHT time	n[3]	n[4]	%[5]	Volume change	n[6]	%[7]
< 3 months	3	1	33	Increased	0	0
				No change	0	0
				Decreased	1	100
3 to < 6 months	7	4	57	Increased	0	0
				No change	0	0
				Decreased	4	100
6 months to < 1 year	11	4	36	Increased	0	0
				No change	0	0
				Decreased	4	100
1 year to < 5 years	66	37	56	Increased	0	0
				No change	2	5
				Decreased	35	95
5 years to < 10 years	16	11	69	Increased	0	0
				No change	0	0
				Decreased	11	100
10 or more years	4	3	75	Increased	0	0
				No change	0	0
				Decreased	3	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing maximum erectile volume changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing maximum erectile volume changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their maximum erectile volume changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing erection volume changes.

Table 4.74. How satisfied the 61 confident[1] participants who reported experiencing maximum erectile volume changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	1	33	Satisfied	1	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	4	57	Satisfied	0	0
				Somewhat satisfied	1	25
				Neither satisfied nor unsatisfied	1	25
				Somewhat unsatisfied	0	0
				Unsatisfied	2	50
6 months to < 1 year	11	4	36	Satisfied	1	25
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	2	50
				Somewhat unsatisfied	1	25
				Unsatisfied	0	0
1 year to < 5 years	66	37	56	Satisfied	14	38
				Somewhat satisfied	8	22
				Neither satisfied nor unsatisfied	10	27
				Somewhat unsatisfied	1	3
				Unsatisfied	4	11
5 years to < 10 years	16	11	69	Satisfied	6	55
				Somewhat satisfied	3	27
				Neither satisfied nor unsatisfied	2	18
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
10 or more years	4	3	75	Satisfied	2	67
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing maximum erectile volume changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing maximum erectile volume changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their maximum erectile volume changes.
[7]As a percentage of the participants for a given FHT duration experiencing erection volume changes.

Table 4.75. The frequency at which the 108 confident[1] participants experienced fat redistribution, facial hair changes, and skin texture changes, grouped by feminizing hormone therapy (FHT) regimen.

Result		Fat redistribution		Facial hair changes		Skin texture changes	
Regimen	n[2]	n	%[3]	n	%[3]	n	%[3]
Estrogen only	16	13	81	7	44	14	88
Antiandrogen only	1	0	0	0	0	0	0
Estrogen + Progesterone	23	23	100	11	48	20	87
Estrogen + Antiandrogen	28	19	68	15	54	26	93
Estrogen + Testosterone	1	1	100	0	0	1	100
Estrogen + Progesterone + Antiandrogen	38	32	84	19	50	34	89
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	0	0	1	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Total confident participants using the given FHT regimen.
[3]As a percentage of confident participants using the given FHT regimen.

Table 4.76. In which locations the 88 confident[1] participants who reported fat distribution changes experienced fat redistribution, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Location	n[5]	%[6]
Estrogen only	16	13	81	Belly	9	69
				Hips and buttocks	9	69
				Face and neck	9	69
				Arms and chest	11	85
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	23	100	Belly	11	48
				Hips and buttocks	23	100
				Face and neck	16	70
				Arms and chest	14	61
Estrogen + Antiandrogen	28	19	68	Belly	10	53
				Hips and buttocks	16	84
				Face and neck	15	79
				Arms and chest	12	63
Estrogen + Testosterone	1	1	100	Belly	1	100
				Hips and buttocks	0	0
				Face and neck	1	100
				Arms and chest	1	100
Estrogen + Progesterone + Antiandrogen	38	32	84	Belly	21	66
				Hips and buttocks	32	100
				Face and neck	16	50
				Arms and chest	17	53
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing fat distribution changes.
[4]The percentage of confident participants using the given regimen who reported experiencing fat distribution changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced fat redistribution to the given location.
[6]As a percentage of the participants for a given FHT regimen experiencing fat distribution changes.

Table 4.77. Which locations the 88 confident[1] participants reported fat distribution changes, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Location	n[6]	%[7]
< 3 months	3	1	33	Belly	1	100
				Hips and buttocks	1	100
				Face and neck	1	100
				Arms and chest	1	100
3 to < 6 months	7	4	57	Belly	1	25
				Hips and buttocks	3	75
				Face and neck	2	50
				Arms and chest	3	75
6 months to < 1 year	11	5	45	Belly	3	60
				Hips and buttocks	5	100
				Face and neck	3	60
				Arms and chest	2	40
1 year to < 5 years	66	60	91	Belly	31	52
				Hips and buttocks	58	97
				Face and neck	37	62
				Arms and chest	34	57
5 years to < 10 years	16	14	88	Belly	12	86
				Hips and buttocks	11	79
				Face and neck	13	93
				Arms and chest	12	86
10 or more years	4	4	100	Belly	4	100
				Hips and buttocks	2	50
				Face and neck	1	25
				Arms and chest	3	75

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing fat distribution changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing fat distribution changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced fat redistribution to the given location.
[7]As a percentage of the participants for a given FHT duration experiencing fat distribution changes.

There was no significant change in the fat distribution to the belly, face and neck, or arms and chest between those using FHT regimens containing progesterone and those using FHT regimens not containing progesterone.

Those taking FHT for greater than one year were more likely ($P < 0.0001$) than those taking FHT for less than one year to report fat distribution changes. Overall, of the 88 participants reporting body fat redistribution changes, 36 were satisfied with the changes, 39 were somewhat satisfied, five were neither satisfied nor unsatisfied, seven were somewhat unsatisfied and one was unsatisfied. Satisfaction with body fat redistribution was not affected by regimen (Table 4.78) and for all FHT time durations at least one person reported fat redistribution (Table 4.79).

Belly fat

For the 52 participants out of 108 confident survey participants experiencing belly fat changes, belly fat shape was perceived to have become more feminine in 35 participants, to be about the same in one participant, to be more masculine in one participant and to have changed shape but did appear more feminine or masculine in 11 participants (Table 4.80). Of the 52 participants, 26 participants indicated that their belly fat levels increased, ten indicated belly fat levels remained about the same and 16 reported that it decreased (Table 4.81). Duration of FHT did not significantly impact the perception of belly fat shape (Table 4.82) or the belly fat amount (Table 4.83).

Hip and buttock fat

For the 80 participants experiencing changes in hip and buttock fat 71 participants indicated that their levels increased, nine indicated levels remained about the same and no one indicated that levels decreased (Table 4.84).

Table 4.78. How satisfied the 88 confident[1] participants who reported experiencing fat redistribution changes were overall, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	13	81	Satisfied	6	46
				Somewhat satisfied	3	23
				Neither satisfied nor unsatisfied	1	8
				Somewhat unsatisfied	3	23
				Unsatisfied	0	0
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	23	100	Satisfied	16	70
				Somewhat satisfied	6	26
				Neither satisfied nor unsatisfied	1	4
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	19	68	Satisfied	8	42
				Somewhat satisfied	8	42
				Neither satisfied nor unsatisfied	1	5
				Somewhat unsatisfied	2	11
				Unsatisfied	0	0
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	32	84	Satisfied	6	19
				Somewhat satisfied	21	66
				Neither satisfied nor unsatisfied	2	6
				Somewhat unsatisfied	2	6
				Unsatisfied	1	3
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing fat redistribution changes.
[4]The percentage of confident participants using the given regimen who reported experiencing fat redistribution changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their fat redistribution changes.
[6]As a percentage of the participants for a given FHT regimen experiencing overall fat distribution changes.

Table 4.79. How satisfied the 88 confident[1] participants who reported experiencing fat redistribution changes were overall, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	1	33	Satisfied	1	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	4	57	Satisfied	4	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
6 months to < 1 year	11	5	45	Satisfied	1	20
				Somewhat satisfied	3	60
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	20
				Unsatisfied	0	0
1 year to < 5 years	66	60	91	Satisfied	25	42
				Somewhat satisfied	27	45
				Neither satisfied nor unsatisfied	2	3
				Somewhat unsatisfied	5	8
				Unsatisfied	1	2
5 years to < 10 years	16	14	88	Satisfied	5	36
				Somewhat satisfied	7	50
				Neither satisfied nor unsatisfied	2	14
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
10 or more years	4	4	100	Satisfied	0	0
				Somewhat satisfied	2	50
				Neither satisfied nor unsatisfied	1	25
				Somewhat unsatisfied	1	25
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing fat redistribution changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing fat redistribution changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their fat redistribution changes.
[7]As a percentage of the participants for a given FHT duration experiencing fat distribution changes.

Table 4.80. How the perceived fat shape changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 52 confident[1] participants who reported belly fat shape changes.

Regimen	n[2]	n[3]	%[4]	Perceived change	n[5]	%[6]
Estrogen only	16	9	56	Become more feminine	5	56
				About the same	1	11
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	3	33
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	11	48	Become more feminine	9	82
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	18
Estrogen + Antiandrogen	28	10	36	Become more feminine	7	70
				About the same	1	10
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	20
Estrogen + Testosterone	1	1	100	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Estrogen + Progesterone + Antiandrogen	38	21	55	Become more feminine	13	62
				About the same	2	10
				Become more masculine	1	5
				Changed shape, but appears neither more feminine nor more masculine	4	19
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing belly fat shape changes.
[4]The percentage of confident participants using the given regimen who reported experiencing belly fat shape changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced belly fat shape changes of the given type.
[6]As a percentage of the participants for a given FHT regimen experiencing belly fat shape changes.

Table 4.81. How the amount of fat changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 52 confident[1] participants who reported fat changes to their belly.

Regimen	n[2]	n[3]	%[4]	Change	n[5]	%[6]
Estrogen only	16	9	56	Increased	4	44
				About the same	1	11
				Decreased	4	44
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	11	48	Increased	5	45
				About the same	2	18
				Decreased	4	36
Estrogen + Antiandrogen	28	10	36	Increased	4	40
				About the same	3	30
				Decreased	3	30
Estrogen + Testosterone	1	1	100	Increased	1	100
				About the same	0	0
				Decreased	0	0
Estrogen + Progesterone + Antiandrogen	38	21	55	Increased	12	57
				About the same	4	19
				Decreased	5	24
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing belly fat distribution changes.
[4]The percentage of confident participants using the given regimen who reported experiencing belly fat distribution changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced belly fat amount changes of the given quantity.
[6]As a percentage of the participants for a given FHT regimen experiencing belly fat changes.

Table 4.82. How the perceived fat shape the 52 confident[1] participants who reported belly fat shape changes changed, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Perceived change	n[6]	%[7]
< 3 months	3	1	33	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
3 to < 6 months	7	1	14	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
6 months to < 1 year	11	3	27	Become more feminine	2	67
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	33
1 year to < 5 years	66	31	47	Become more feminine	19	61
				About the same	3	10
				Become more masculine	1	3
				Changed shape, but appears neither more feminine nor more masculine	7	23
5 years to < 10 years	16	12	75	Become more feminine	11	92
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	8
10 or more years	4	4	100	Become more feminine	1	25
				About the same	1	25
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	50

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing belly fat shape changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing belly fat shape changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced belly fat shape changes of the given type.
[7]As a percentage of the participants for a given FHT duration experiencing belly fat shape changes.

Table 4.83. How the amount of fat the 52 confident[1] participants who reported fat changes to their belly changed, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Change	n[6]	%[7]
< 3 months	3	1	33	Increased	0	0
				About the same	0	0
				Decreased	1	100
3 to < 6 months	7	1	14	Increased	0	0
				About the same	0	0
				Decreased	1	100
6 months to < 1 year	11	3	27	Increased	1	33
				About the same	0	0
				Decreased	2	67
1 year to < 5 years	66	31	47	Increased	15	48
				About the same	6	19
				Decreased	10	32
5 years to < 10 years	16	12	75	Increased	8	67
				About the same	4	33
				Decreased	0	0
10 or more years	4	4	100	Increased	2	50
				About the same	0	0
				Decreased	2	50

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing belly fat distribution changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing belly fat distribution changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced belly fat amount changes of the given quantity.
[7]As a percentage of the participants for a given FHT duration experiencing belly fat changes.

Table 4.84. How the amount of fat the 80 confident[1] participants who reported fat changes to their hips and buttocks changed, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Change	n[5]	%[6]
Estrogen only	16	9	56	Increased	7	78
				About the same	2	22
				Decreased	0	0
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	23	100	Increased	21	91
				About the same	2	9
				Decreased	0	0
Estrogen + Antiandrogen	28	16	57	Increased	14	88
				About the same	2	13
				Decreased	0	0
Estrogen + Testosterone	1	0	0	No hips and buttocks fat redistribution reported		
Estrogen + Progesterone + Antiandrogen	38	32	84	Increased	29	91
				About the same	3	9
				Decreased	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing hips and buttocks fat distribution changes.
[4]The percentage of confident participants using the given regimen who reported experiencing hips and buttocks fat distribution changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced hips and buttocks fat amount changes of the given quantity.
[6]As a percentage of the participants for a given FHT regimen experiencing hip and buttocks fat changes.

Hip and buttock fat shape was perceived to have become more feminine in 72 of the 80 participants, to be about the same in three participants, to be more masculine in no participants, to have changed shape but did appear more feminine or masculine in four participants and one participant of the 80 did not respond (Table 4.85). Duration of FHT did not significantly impact hip and buttock fat amount (Table 4.86) or the perception of hip and buttock fat shape (Table 4.87).

Face and neck fat

For the 57 of the 108 confident survey participants experiencing changes in face and neck fat, 38 participants indicated that their levels increased, 13 indicated their levels remained about the same and six indicated that their levels decreased (Table 4.88). Face and neck fat shape was perceived to have become more feminine in 53 of the 57 participants and to have changed shape but not appear more feminine or masculine in the remaining four participants (Table 4.89). Duration of FHT did not significantly impact face and neck fat amount (Table 4.90) or the perception of face and neck fat shape (Table 4.91).

Arm and chest fat

For the 55 participants out of 108 confident survey participants experiencing arm and chest fat changes, 40 participants indicated that their levels increased, 12 indicated their levels remained about the same and three reported that the amount decreased (Table 4.92). Arm and chest fat shape was perceived to have become more feminine in 45 of the 55 participants reporting a change, to be about the same in six, to have changed shape but did appear more feminine or masculine in four, and to become more masculine in none (Table 4.93). Duration of FHT did not significantly impact arm and chest fat amount (Table 4.94) or the perception of arm and chest fat shape (Table 4.95).

Table 4.85. How the perceived fat shape the 80 confident[1] participants who reported hips and buttocks fat shape changes changed, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Perceived change	n[5]	%[6]
Estrogen only	16	9	56	Become more feminine	9	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	23	100	Become more feminine	22	96
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	4
Estrogen + Antiandrogen	28	16	57	Become more feminine	13	81
				About the same	1	6
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	13
Estrogen + Testosterone	1	0	0	No hips and buttocks fat redistribution reported		
Estrogen + Progesterone + Antiandrogen	38	32	84	Become more feminine	28	88
				About the same	2	6
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	3
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing hips and buttocks fat shape changes.
[4]The percentage of confident participants using the given regimen who reported experiencing hips and buttocks fat shape changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced hips and buttocks fat shape changes of the given type.
[6]As a percentage of the participants for a given FHT regimen experiencing hip and buttocks fat shape changes.

Table 4.86. How the amount of fat the 80 confident[1] participants who reported fat changes to their hips and buttocks changed, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Change	n[6]	%[7]
< 3 months	3	1	33	Increased	1	100
				About the same	0	0
				Decreased	0	0
3 to < 6 months	7	3	43	Increased	1	33
				About the same	2	67
				Decreased	0	0
6 months to < 1 year	11	5	45	Increased	5	100
				About the same	0	0
				Decreased	0	0
1 year to < 5 years	66	58	88	Increased	53	91
				About the same	5	9
				Decreased	0	0
5 years to < 10 years	16	11	69	Increased	9	82
				About the same	2	18
				Decreased	0	0
10 or more years	4	2	50	Increased	2	100
				About the same	0	0
				Decreased	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing hips and buttocks fat distribution changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing hips and buttocks fat distribution changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced hips and buttocks fat amount changes of the given quantity.
[7]As a percentage of the participants for a given FHT duration experiencing hip and buttock fat changes.

Table 4.87. How the perceived fat shape the 80 confident[1] participants who reported hips and buttocks fat shape changes changed, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Perceived change	n[6]	%[7]
< 3 months	3	1	33	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
3 to < 6 months	7	3	43	Become more feminine	2	67
				About the same	1	33
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
6 months to < 1 year	11	5	45	Become more feminine	4	80
				About the same	0	0
				Become more masculine	0	-
				Changed shape, but appears neither more feminine nor more masculine	1	20
1 year to < 5 years	66	58	88	Become more feminine	54	93
				About the same	2	3
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	2
5 years to < 10 years	16	11	69	Become more feminine	9	82
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	18
10 or more years	4	2	50	Become more feminine	2	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing hips and buttocks fat shape changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing hips and buttocks fat shape changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced hips and buttocks fat shape changes of the given type.
[7]As a percentage of the participants for a given FHT duration experiencing hip and buttock fat shape changes.

Table 4.88. How the amount of fat the 57 confident[1] participants who reported fat changes to their face and neck changed, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Change	n[5]	%[6]
Estrogen only	16	9	56	Increased	4	44
				About the same	5	56
				Decreased	0	0
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	16	70	Increased	11	69
				About the same	4	25
				Decreased	1	6
Estrogen + Antiandrogen	28	15	54	Increased	10	67
				About the same	2	13
				Decreased	3	20
Estrogen + Testosterone	1	1	100	Increased	1	100
				About the same	0	0
				Decreased	0	0
Estrogen + Progesterone + Antiandrogen	38	16	42	Increased	12	75
				About the same	2	13
				Decreased	2	13
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3] The number of confident participants using the given regimen who reported experiencing face and neck fat distribution changes.
[4]The percentage of confident participants using the given regimen who reported experiencing face and neck fat distribution changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced face and neck fat amount changes of the given quantity.
[6]As a percentage of the participants for a given FHT regimen experiencing face and neck fat changes.

Table 4.89. How the perceived fat shape the 57 confident[1] participants who reported face and neck fat shape changes changed, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Perceived change	n[5]	%[6]
Estrogen only	16	9	56	Become more feminine	8	89
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	11
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	16	70	Become more feminine	15	94
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	6
Estrogen + Antiandrogen	28	15	54	Become more feminine	13	87
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	13
Estrogen + Testosterone	1	1	100	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Estrogen + Progesterone + Antiandrogen	38	16	42	Become more feminine	16	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing face and neck fat shape changes.
[4]The percentage of confident participants using the given regimen who reported experiencing face and neck fat shape changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced face and neck fat shape changes of the given type.
[6]As a percentage of the participants for a given FHT regimen experiencing face and neck fat shape changes.

Table 4.90. How the amount of fat the 57 confident[1] participants who reported fat changes to their face and neck changed, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Change	n[6]	%[7]
< 3 months	3	1	33	Increased	0	0
				About the same	0	0
				Decreased	1	100
3 to < 6 months	7	2	29	Increased	0	0
				About the same	1	50
				Decreased	1	50
6 months to < 1 year	11	3	27	Increased	3	100
				About the same	0	0
				Decreased	0	0
1 year to < 5 years	66	37	56	Increased	26	70
				About the same	7	19
				Decreased	4	11
5 years to < 10 years	16	13	81	Increased	8	62
				About the same	5	38
				Decreased	0	0
10 or more years	4	1	25	Increased	1	100
				About the same	0	0
				Decreased	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing face and neck fat distribution changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing face and neck fat distribution changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced face and neck fat amount changes of the given quantity.
[7]As a percentage of the participants for a given FHT duration experiencing face and neck fat changes.

Table 4.91. How the perceived fat shape changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 57 confident[1] participants who reported face and neck fat shape changes.

FHT time	n^3	n^4	$\%^5$	Perceived change	n^6	$\%^7$
< 3 months	3	1	33	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
3 to < 6 months	7	2	29	Become more feminine	2	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
6 months to < 1 year	11	3	27	Become more feminine	2	67
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	33
1 year to < 5 years	66	37	56	Become more feminine	35	95
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	2	5
5 years to < 10 years	16	13	81	Become more feminine	12	92
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	8
10 or more years	4	1	25	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing face and neck fat shape changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing face and neck fat shape changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced face and neck fat shape changes of the given type.
[7]As a percentage of the participants for a given FHT duration experiencing face and neck fat shape changes.

Table 4.92. How the amount of fat the 55 confident[1] participants who reported fat changes to their arms and chest changed, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Change	n[5]	%[6]
Estrogen only	16	11	69	Increased	7	64
				About the same	2	18
				Decreased	2	18
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	14	61	Increased	13	93
				About the same	1	7
				Decreased	0	0
Estrogen + Antiandrogen	28	12	43	Increased	8	67
				About the same	3	25
				Decreased	1	8
Estrogen + Testosterone	1	1	100	Increased	1	100
				About the same	0	0
				Decreased	0	0
Estrogen + Progesterone + Antiandrogen	38	17	45	Increased	11	65
				About the same	6	35
				Decreased	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing arms and chest fat distribution changes.
[4]The percentage of confident participants using the given regimen who reported experiencing arms and chest fat distribution changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced arms and chest fat amount changes of the given quantity.
[6]As a percentage of the participants for a given FHT regimen experiencing arms and chest fat changes.

Table 4.93. How the perceived fat shape the 55 confident[1] participants who reported arms and chest fat shape changes changed, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Perceived change	n[5]	%[6]
Estrogen only	16	11	69	Become more feminine	10	91
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	1	9
Antiandrogen only	1	0	0	No fat redistribution reported		
Estrogen + Progesterone	23	14	61	Become more feminine	13	93
				About the same	1	7
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Estrogen + Antiandrogen	28	12	43	Become more feminine	8	67
				About the same	1	8
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	3	25
Estrogen + Testosterone	1	1	100	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Estrogen + Progesterone + Antiandrogen	38	17	45	Become more feminine	13	76
				About the same	4	24
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	0	0	No fat redistribution reported		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing arms and chest fat shape changes.
[4]The percentage of confident participants using the given regimen who reported experiencing arms and chest fat shape changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who experienced arms and chest fat shape changes of the given type.
[6]As a percentage of the participants for a given FHT regimen experiencing face and chest fat shape changes.

Table 4.94. How the amount of fat changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 55 confident[1] participants who reported fat changes to their arms and chest.

FHT time	n[3]	n[4]	%[5]	Change	n[6]	%[7]
< 3 months	3	1	33	Increased	1	100
				About the same	0	0
				Decreased	0	0
3 to < 6 months	7	3	43	Increased	1	33
				About the same	2	67
				Decreased	0	0
6 months to < 1 year	11	2	18	Increased	1	50
				About the same	1	50
				Decreased	0	0
1 year to < 5 years	66	34	52	Increased	26	76
				About the same	7	21
				Decreased	1	3
5 years to < 10 years	16	12	75	Increased	9	75
				About the same	2	17
				Decreased	1	8
10 or more years	4	3	75	Increased	2	67
				About the same	0	0
				Decreased	1	33

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing arms and chest fat distribution changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing arms and chest fat distribution changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced arms and chest fat amount changes of the given quantity.
[7]As a percentage of the participants for a given FHT duration experiencing arms and chest fat changes.

Table 4.95. How the perceived fat shape the 55 confident[1] participants who reported arms and chest fat shape changes changed, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Perceived change	n[6]	%[8]
< 3 months	3	1	33	Become more feminine	1	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
3 to < 6 months	7	3	43	Become more feminine	3	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
6 months to < 1 year	11	2	18	Become more feminine	1	50
				About the same	1	50
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
1 year to < 5 years	66	34	52	Become more feminine	26	76
				About the same	4	12
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	4	12
5 years to < 10 years	16	12	75	Become more feminine	11	92
				About the same	1	8
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0
10 or more years	4	3	75	Become more feminine	3	100
				About the same	0	0
				Become more masculine	0	0
				Changed shape, but appears neither more feminine nor more masculine	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing arms and chest fat shape changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing arms and chest fat shape changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who experienced arms and chest fat shape changes of the given type.
[7]As a percentage of the participants for a given FHT duration experiencing arms and chest fat shape changes.

Facial hair

For the 53 participants that reported facial hair changes, one participant indicated that their facial hair amount increased some, six reported no change, 34 indicated their facial hair amount decreased some and the remaining 12 indicated their facial hair amount halved or more than halved (Table 4.96). Of the 53 participants reporting facial hair texture changes no participant indicated that it became much thicker or more coarse, or even slightly thicker and more coarse (Table 4.97). Instead, six reported no change, 34 indicated that their facial hair had become slightly thinner and softer and 13 indicated it had become much thinner and softer. Overall satisfaction results with facial hair changes based on FHT regimen (including both amount and texture), was 12 participants being satisfied, 24 being somewhat satisfied, four being neither satisfied nor unsatisfied, seven being somewhat unsatisfied and six being unsatisfied (Table 4.98). Participants taking FHT for longer than one year were more likely ($P < 0.0001$) to report changes in facial hair amount (Table 4.99) and texture (Table 4.100) than those taking FHT for less than one year. Satisfaction with facial hair results or the specifics of the changes was not impacted by FHT duration (Table 4.101).

Skin changes

Of the 96 participants out of the 108 confident survey participants indicating skin changes, none of them indicated that their skin became more oily, six indicated that their skin became somewhat more oily, 20 reported no change, 38 indicated their skin became somewhat less oily, 31 indicated that their skin became much less oily, and one participant did not answer (Table 4.102). Sixty-six participants indicated their skin became much softer, 30 indicated it became somewhat softer and no one indicated no change, or that their skin texture became somewhat rougher or much rougher (Table 4.103).

Table 4.96. How facial hair frequency changed, as grouped by FHT regimen, among the 53 confident[1] participants who reported experiencing facial hair changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	7	44	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	1	14
				Decreased some	5	71
				Halved or more than halved	1	14
Antiandrogen only	1	0	0	No facial hair changes reported		
Estrogen + Progesterone	23	11	48	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	3	27
				Decreased some	3	27
				Halved or more than halved	5	45
Estrogen + Antiandrogen	28	15	54	Doubled or more than doubled	0	-
				Increased some	1	7
				No change	0	0
				Decreased some	11	73
				Halved or more than halved	3	20
Estrogen + Testosterone	1	0	0	No facial hair changes reported		
Estrogen + Progesterone + Antiandrogen	38	19	50	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	2	11
				Decreased some	14	74
				Halved or more than halved	3	16
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	0	0
				Decreased some	1	100
				Halved or more than halved	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing facial hair changes.
[4]The percentage of confident participants using the given regimen who reported experiencing facial hair changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their facial hair frequency changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing facial hair frequency changes.

Table 4.97. How facial hair texture changed, as grouped by FHT regimen, among the 53 confident[1] participants who reported experiencing facial hair changes.

Regimen	n[2]	n[3]	%[4]	Amount of change	n[5]	%[6]
Estrogen only	16	7	44	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	1	14
				Slightly thinner/softer	4	57
				Much thinner/softer	2	29
Antiandrogen only	1	0	0	No facial hair changes reported		
Estrogen + Progesterone	23	11	48	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	1	9
				Slightly thinner/softer	8	73
				Much thinner/softer	2	18
Estrogen + Antiandrogen	28	15	54	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	1	7
				Slightly thinner/softer	10	67
				Much thinner/softer	4	27
Estrogen + Testosterone	1	0	0	No facial hair changes reported		
Estrogen + Progesterone + Antiandrogen	38	19	50	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	3	16
				Slightly thinner/softer	11	58
				Much thinner/softer	5	26
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	0	0
				Slightly thinner/softer	1	100
				Much thinner/softer	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing facial hair changes.
[4]The percentage of confident participants using the given regimen who reported experiencing facial hair changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their facial hair texture changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing facial hair texture changes.

Table 4.98. How satisfied the 53 confident[1] participants who reported experiencing facial hair changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	7	44	Satisfied	4	57
				Somewhat satisfied	2	29
				Neither satisfied nor unsatisfied	1	14
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Antiandrogen only	1	0	0	No facial hair changes reported		
Estrogen + Progesterone	23	11	48	Satisfied	3	27
				Somewhat satisfied	5	45
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	3	27
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	15	54	Satisfied	4	27
				Somewhat satisfied	5	33
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	3	20
				Unsatisfied	3	20
Estrogen + Testosterone	1	0	0	No facial hair changes reported		
Estrogen + Progesterone + Antiandrogen	38	19	50	Satisfied	1	5
				Somewhat satisfied	11	58
				Neither satisfied nor unsatisfied	3	16
				Somewhat unsatisfied	1	5
				Unsatisfied	3	16
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing facial hair changes.
[4]The percentage of confident participants using the given regimen who reported experiencing facial hair changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their facial hair changes.
[6]As a percentage of the participants for a given FHT regimen experiencing facial hair changes.

Table 4.99. How facial hair frequency changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 53 confident[1] participants who reported experiencing facial hair changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	0	0	No facial hair changes reported		
3 to < 6 months	7	4	57	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	0	0
				Decreased some	4	100
				Halved or more than halved	0	0
6 months to < 1 year	11	5	45	Doubled or more than doubled	0	-
				Increased some	1	20
				No change	0	0
				Decreased some	4	80
				Halved or more than halved	0	0
1 year to < 5 years	66	34	52	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	6	18
				Decreased some	20	59
				Halved or more than halved	8	24
5 years to < 10 years	16	9	56	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	0	0
				Decreased some	5	56
				Halved or more than halved	4	44
10 or more years	4	1	25	Doubled or more than doubled	0	-
				Increased some	0	0
				No change	0	0
				Decreased some	1	100
				Halved or more than halved	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing facial hair changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing facial hair changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their facial hair frequency changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing facial hair frequency changes.

Table 4.100. How facial hair texture changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 53 confident[1] participants who reported experiencing facial hair changes.

FHT time	n[3]	n[4]	%[5]	Amount of change	n[6]	%[7]
< 3 months	3	0	0	No facial hair change reported		
3 to < 6 months	7	4	57	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	1	25
				Slightly thinner/softer	3	75
				Much thinner/softer	0	0
6 months to < 1 year	11	5	45	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	0	0
				Slightly thinner/softer	3	60
				Much thinner/softer	2	40
1 year to < 5 years	66	34	52	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	5	15
				Slightly thinner/softer	24	71
				Much thinner/softer	5	15
5 years to < 10 years	16	9	56	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	0	0
				Slightly thinner/softer	3	33
				Much thinner/softer	6	67
10 or more years	4	1	25	Much thicker/more coarse	0	0
				Slightly thicker/more coarse	0	0
				No change	0	0
				Slightly thinner/softer	1	100
				Much thinner/softer	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing facial hair changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing facial hair changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their facial hair texture changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing facial hair texture changes.

Table 4.101. How satisfied the 53 confident[1] participants who reported experiencing facial hair changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	0	0	No facial hair change reported		
3 to < 6 months	7	4	57	Satisfied	2	50
				Somewhat satisfied	1	25
				Neither satisfied nor unsatisfied	1	25
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
6 months to < 1 year	11	5	45	Satisfied	1	20
				Somewhat satisfied	2	40
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	20
				Unsatisfied	1	20
1 year to < 5 years	66	34	52	Satisfied	5	15
				Somewhat satisfied	16	47
				Neither satisfied nor unsatisfied	2	6
				Somewhat unsatisfied	6	18
				Unsatisfied	5	15
5 years to < 10 years	16	9	56	Satisfied	4	44
				Somewhat satisfied	5	56
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
10 or more years	4	1	25	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	100
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing facial hair changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing facial hair changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their facial hair changes.
[7]As a percentage of the participants for a given FHT duration experiencing facial hair changes.

Table 4.102. How skin oil changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 96 confident[1] participants who reported experiencing skin changes.

Regimen	n[2]	n[3]	%[4]	Oil change	n[5]	%[6]
Estrogen only	16	14	88	Become much more oily	0	0
				Become somewhat more oily	1	7
				No change	0	0
				Become somewhat less oily	5	36
				Become much less oily	8	57
Antiandrogen only	1	0	0	No skin changes reported		
Estrogen + Progesterone	23	20	87	Become much more oily	0	-
				Become somewhat more oily	1	17
				No change	5	25
				Become somewhat less oily	6	16
				Become much less oily	8	26
Estrogen + Antiandrogen	28	26	93	Become much more oily	0	-
				Become somewhat more oily	2	33
				No change	8	40
				Become somewhat less oily	8	21
				Become much less oily	8	26
Estrogen + Testosterone	1	1	100	Become much more oily	0	-
				Become somewhat more oily	0	0
				No change	1	5
				Become somewhat less oily	0	0
				Become much less oily	0	0
Estrogen + Progesterone + Antiandrogen	38	34	89	Become much more oily	0	-
				Become somewhat more oily	2	33
				No change	6	30
				Become somewhat less oily	18	47
				Become much less oily	7	23
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Become much more oily	0	-
				Become somewhat more oily	0	0
				No change	0	0
				Become somewhat less oily	1	3
				Become much less oily	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing skin changes.
[4]The percentage of confident participants using the given regimen who reported experiencing skin changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their skin oil changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing skin changes.

Table 4.103. How skin texture changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 96 confident[1] participants who reported experiencing skin changes.

Regimen	n[2]	n[3]	%[4]	Texture change	n[5]	%[6]
Estrogen only	16	14	88	Become much softer	11	79
				Become somewhat softer	3	21
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
Antiandrogen only	1	0	0	No skin change reported		
Estrogen + Progesterone	23	20	87	Become much softer	18	90
				Become somewhat softer	2	10
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
Estrogen + Antiandrogen	28	26	93	Become much softer	16	62
				Become somewhat softer	10	38
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
Estrogen + Testosterone	1	1	100	Become much softer	0	0
				Become somewhat softer	1	100
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
Estrogen + Progesterone + Antiandrogen	38	34	89	Become much softer	20	59
				Become somewhat softer	14	41
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Become much softer	1	100
				Become somewhat softer	0	0
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing skin changes.
[4]The percentage of confident participants using the given regimen who reported experiencing skin changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their skin texture changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing skin texture changes.

For the 96 participants reporting skin changes, 75 of them were satisfied, 18 were somewhat satisfied, three were neither satisfied nor unsatisfied, and no one was somewhat unsatisfied or unsatisfied (Table 4.104). FHT duration for the participants indicating skin changes did not impact skin oiliness (Table 4.105), texture (Table 4.106) or satisfaction with skin changes (Table 4.107).

Sleep changes

A total of 69 participants out of the 108 confident survey participants indicated that they had changes in their sleep. Of these 69 participants, 32 indicated that they were sleeping more, 31 indicated that they were sleeping the same amount, five indicated they were sleeping less, and one participant did not respond (Table 4.108). For quality of sleep, 35 participants indicated that their sleep quality had become better, 30 indicated no change and four indicated their sleep quality had become worse (Table 4.109). For the changes in the amount of sleep, 14 participants indicated they were satisfied, 11 indicated they were somewhat satisfied, seven indicated that they were neither satisfied nor unsatisfied, three indicated they were somewhat unsatisfied, three indicated they were unsatisfied and 31 participants did not indicate a satisfaction level (Table 4.110). Similarly, for changes in the quality of sleep, 24 participants indicated they were satisfied, nine indicated they were somewhat satisfied, two indicated that they were neither satisfied nor unsatisfied, none indicated they were somewhat unsatisfied, four indicated they were unsatisfied and 30 participants did not indicate a satisfaction level (Table 4.111). It is unclear why so many participants did not indicate a satisfaction level for these two questions. Differences in sleep amount (Table 4.112) and quality (Table 4.113), and satisfaction with sleep amount (Table 4.114) and quality (Table 4.115) did not vary based on FHT duration.

Table 4.104. How satisfied the 96 confident[1] participants who reported experiencing skin changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	14	88	Satisfied	10	71
				Somewhat satisfied	3	21
				Neither satisfied nor unsatisfied	1	7
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Antiandrogen only	1	0	0	No skin change reported		
Estrogen + Progesterone	23	20	87	Satisfied	19	95
				Somewhat satisfied	1	5
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	26	93	Satisfied	22	85
				Somewhat satisfied	3	12
				Neither satisfied nor unsatisfied	1	4
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	34	89	Satisfied	23	68
				Somewhat satisfied	10	29
				Neither satisfied nor unsatisfied	1	3
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	1	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing skin changes.
[4]The percentage of confident participants using the given regimen who reported experiencing skin changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their skin changes.
[6]As a percentage of the participants for a given FHT regimen experiencing skin changes.

Table 4.105. How skin oil changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 96 confident[1] participants who reported experiencing skin changes.

FHT time	n[3]	n[4]	%[5]	Oil change	n[6]	%[7]
< 3 months	3	2	67	Become much more oily	0	0
				Become somewhat more oily	0	0
				No change	0	0
				Become somewhat less oily	1	50
				Become much less oily	1	50
3 to < 6 months	7	7	100	Become much more oily	0	0
				Become somewhat more oily	2	29
				No change	3	44
				Become somewhat less oily	1	14
				Become much less oily	1	14
6 months to < 1 year	11	9	82	Become much more oily	0	0
				Become somewhat more oily	0	0
				No change	3	33
				Become somewhat less oily	2	22
				Become much less oily	4	44
1 year to < 5 years	66	60	91	Become much more oily	0	-
				Become somewhat more oily	4	7
				No change	9	15
				Become somewhat less oily	28	47
				Become much less oily	18	30
5 years to < 10 years	16	15	94	Become much more oily	0	-
				Become somewhat more oily	0	0
				No change	5	33
				Become somewhat less oily	6	40
				Become much less oily	4	27
10 or more years	4	3	75	Become much more oily	0	0
				Become somewhat more oily	0	0
				No change	0	0
				Become somewhat less oily	0	0
				Become much less oily	3	100

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing skin changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing skin changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their skin oil changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing skin oil changes.

Table 4.106. How skin texture changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 96 confident[1] participants who reported experiencing skin changes.

FHT time	n[3]	n[4]	%[5]	Texture change	n[6]	%[7]
< 3 months	3	2	67	Become much softer	1	50
				Become somewhat softer	1	50
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
3 to < 6 months	7	7	100	Become much softer	4	57
				Become somewhat softer	3	43
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
6 months to < 1 year	11	9	82	Become much softer	7	78
				Become somewhat softer	2	22
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
1 year to < 5 years	66	60	91	Become much softer	39	65
				Become somewhat softer	21	35
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
5 years to < 10 years	16	15	94	Become much softer	12	80
				Become somewhat softer	3	20
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0
10 or more years	4	3	75	Become much softer	3	100
				Become somewhat softer	0	0
				No change	0	0
				Become somewhat rougher	0	0
				Become much rougher	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing skin changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing skin changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their skin texture changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing skin texture changes.

Table 4.107. How satisfied the 96 confident[1] participants who reported experiencing skin changes were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	2	67	Satisfied	2	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	0	-
3 to < 6 months	7	7	100	Satisfied	7	100
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	0	-
6 months to < 1 year	11	9	82	Satisfied	8	89
				Somewhat satisfied	1	11
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	0	-
1 year to < 5 years	66	60	91	Satisfied	45	75
				Somewhat satisfied	13	22
				Neither satisfied nor unsatisfied	2	3
				Somewhat unsatisfied	0	-
				Unsatisfied	0	-
5 years to < 10 years	16	15	94	Satisfied	11	73
				Somewhat satisfied	4	27
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	0	-
10 or more years	4	3	75	Satisfied	2	67
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	-
				Unsatisfied	0	-

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing skin changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing skin changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their skin changes.
[7]As a percentage of the participants for a given FHT duration experiencing skin changes.

Table 4.108. How the amount of sleep changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 69 confident[1] participants who reported experiencing sleep and energy changes.

Regimen	n[2]	n[3]	% [4]	Amount of sleep change	n[5]	%[6]
Estrogen only	16	11	69	Sleeping more	4	36
				Sleeping the same amount	5	45
				Sleeping less	1	9
Antiandrogen only	1	0	0	No sleep or energy changes reported		
Estrogen + Progesterone	23	16	70	Sleeping more	10	63
				Sleeping the same amount	6	38
				Sleeping less	0	0
Estrogen + Antiandrogen	28	16	57	Sleeping more	6	38
				Sleeping the same amount	8	50
				Sleeping less	2	13
Estrogen + Testosterone	1	1	100	Sleeping more	0	0
				Sleeping the same amount	1	100
				Sleeping less	0	0
Estrogen + Progesterone + Antiandrogen	38	24	63	Sleeping more	11	46
				Sleeping the same amount	11	46
				Sleeping less	2	8
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Sleeping more	1	100
				Sleeping the same amount	0	0
				Sleeping less	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing sleep and energy changes.
[4]The percentage of confident participants using the given regimen who reported experiencing sleep and energy changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their amount of sleep changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing sleep changes.

Table 4.109. How the quality of sleep changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 69 confident[1] participants who reported experiencing sleep and energy changes.

Regimen	n[2]	n[3]	%[4]	Quality change	n[5]	%[6]
Estrogen only	16	11	69	Has become better	6	55
				No change	4	36
				Has become worse	1	9
Antiandrogen only	1	0	0	No sleep or energy changes reported		
Estrogen + Progesterone	23	16	70	Has become better	8	50
				No change	8	50
				Has become worse	0	0
Estrogen + Antiandrogen	28	16	57	Has become better	7	44
				No change	6	38
				Has become worse	3	19
Estrogen + Testosterone	1	1	100	Has become better	0	0
				No change	1	100
				Has become worse	0	0
Estrogen + Progesterone + Antiandrogen	38	24	63	Has become better	13	54
				No change	11	46
				Has become worse	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Has become better	1	100
				No change	0	0
				Has become worse	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing sleep and energy changes.
[4]The percentage of confident participants using the given regimen who reported experiencing sleep and energy changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their quality of sleep changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing sleep quality changes.

Table 4.110. How satisfied with the changes to the amount of sleep they have been getting the 69 confident[1] participants who reported experiencing sleep and energy changes were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	11	69	Satisfied	1	9
				Somewhat satisfied	2	18
				Neither satisfied nor unsatisfied	1	9
				Somewhat unsatisfied	1	9
				Unsatisfied	1	9
Antiandrogen only	1	0	0	No sleep or energy change reported		
Estrogen + Progesterone	23	16	70	Satisfied	5	31
				Somewhat satisfied	4	25
				Neither satisfied nor unsatisfied	1	6
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	16	57	Satisfied	3	19
				Somewhat satisfied	1	6
				Neither satisfied nor unsatisfied	2	13
				Somewhat unsatisfied	0	0
				Unsatisfied	2	13
Estrogen + Testosterone	1	1	100	Participant did not respond		
Estrogen + Progesterone + Antiandrogen	38	24	63	Satisfied	5	21
				Somewhat satisfied	3	13
				Neither satisfied nor unsatisfied	3	13
				Somewhat unsatisfied	2	8
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] The number of confident participants using the given regimen.
[3] The number of confident participants using the given regimen who reported experiencing sleep and energy changes.
[4] The percentage of confident participants using the given regimen who reported experiencing sleep and energy changes out of the total confident participants using the given regimen.
[5] The number of confident participants using the given regimen who were the given satisfaction level with their sleep and energy changes.
[6]As a percentage of the participants for a given FHT regimen experiencing amount of sleep changes.

Table 4.111. How satisfied with the changes to the quality of sleep they have been getting the 69 confident[1] participants who reported experiencing sleep and energy were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	11	69	Satisfied	4	36
				Somewhat satisfied	1	9
				Neither satisfied nor unsatisfied	1	9
				Somewhat unsatisfied	0	-
				Unsatisfied	1	9
Antiandrogen only	1	0	0	No sleep or energy change reported		
Estrogen + Progesterone	23	16	70	Satisfied	5	31
				Somewhat satisfied	3	19
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	16	57	Satisfied	7	44
				Somewhat satisfied	1	6
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	2	13
Estrogen + Testosterone	1	1	100	Participant did not respond		
Estrogen + Progesterone + Antiandrogen	38	24	63	Satisfied	8	33
				Somewhat satisfied	3	13
				Neither satisfied nor unsatisfied	1	4
				Somewhat unsatisfied	0	-
				Unsatisfied	1	4
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	1	100
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	-
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3] The number of confident participants using the given regimen who reported experiencing sleep and energy changes.
[4]The percentage of confident participants using the given regimen who reported experiencing sleep and energy changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their sleep and energy changes.
[6]As a percentage of the participants for a given FHT regimen experiencing quality of sleep changes.

Table 4.112. How the amount of sleep changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 69 confident[1] participants who reported experiencing sleep and energy changes.

FHT time	n[3]	n[4]	%[5]	Amount of sleep change	n[6]	%[7]
< 3 months	3	3	100	Sleeping more	2	67
				Sleeping the same amount	1	33
				Sleeping less than before	0	0
3 to < 6 months	7	3	43	Sleeping more	0	0
				Sleeping the same amount	2	67
				Sleeping less than before	1	33
6 months to < 1 year	11	6	55	Sleeping more	3	50
				Sleeping the same amount	2	33
				Sleeping less than before	1	17
1 year to < 5 years	66	41	62	Sleeping more	23	56
				Sleeping the same amount	16	39
				Sleeping less than before	2	5
5 years to < 10 years	16	12	75	Sleeping more	3	25
				Sleeping the same amount	8	67
				Sleeping less than before	1	8
10 or more years	4	4	100	Sleeping more	1	25
				Sleeping the same amount	2	50
				Sleeping less than before	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing sleep and energy changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing sleep and energy changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their amount of sleep changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing sleep changes.

Table 4.113. How the quality of sleep changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 69 confident[1] participants who reported experiencing sleep and energy changes.

FHT time	n[3]	n[4]	%[5]	Quality change	n[6]	%[7]
< 3 months	3	3	100	Has become better	1	33
				No change	2	67
				Has become worse	0	0
3 to < 6 months	7	3	43	Has become better	1	33
				No change	1	33
				Has become worse	1	33
6 months to < 1 year	11	6	55	Has become better	2	33
				No change	3	50
				Has become worse	1	17
1 year to < 5 years	66	41	62	Has become better	23	56
				No change	18	44
				Has become worse	0	0
5 years to < 10 years	16	12	75	Has become better	5	42
				No change	5	42
				Has become worse	2	17
10 or more years	4	4	100	Has become better	3	75
				No change	1	25
				Has become worse	0	0

[1] Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2] Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3] The number of confident participants having used FHT for the given time.
[4] The number of confident participants having used FHT for the given time who reported experiencing sleep and energy changes.
[5] The percentage of confident participants having used FHT for the given time who reported experiencing sleep and energy changes out of the total confident participants having used FHT for the given time.
[6] The number of confident participants having used FHT for the given time who reported their quality of sleep changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing sleep quality changes.

Table 4.114. How satisfied with the changes to the amount of sleep they have been getting the 69 confident[1] participants who reported experiencing changes to their sleep and energy were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	3	100	Satisfied	0	0
				Somewhat satisfied	1	33
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	3	43	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	1	33
6 months to < 1 year	11	6	55	Satisfied	1	17
				Somewhat satisfied	1	17
				Neither satisfied nor unsatisfied	1	17
				Somewhat unsatisfied	0	0
				Unsatisfied	1	17
1 year to < 5 years	66	41	62	Satisfied	11	27
				Somewhat satisfied	7	17
				Neither satisfied nor unsatisfied	5	12
				Somewhat unsatisfied	2	5
				Unsatisfied	0	0
5 years to < 10 years	16	12	75	Satisfied	1	8
				Somewhat satisfied	1	8
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	8
				Unsatisfied	1	8
10 or more years	4	4	100	Satisfied	1	25
				Somewhat satisfied	1	25
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing sleep and energy changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing sleep and energy changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their sleep and energy changes.
[7]As a percentage of the participants for a given FHT duration experiencing sleep amount changes.

Table 4.115. How satisfied with the changes to the quality of sleep they have been getting the 69 confident[1] participants who reported experiencing changes to their sleep and energy were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	3	100	Satisfied	1	33
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0
3 to < 6 months	7	3	43	Satisfied	1	33
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	1	33
6 months to < 1 year	11	6	55	Satisfied	1	17
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	17
				Somewhat unsatisfied	0	0
				Unsatisfied	1	17
1 year to < 5 years	66	41	62	Satisfied	15	37
				Somewhat satisfied	7	17
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	1	2
5 years to < 10 years	16	12	75	Satisfied	4	33
				Somewhat satisfied	2	17
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	0	0
				Unsatisfied	1	8
10 or more years	4	4	100	Satisfied	2	50
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	25
				Somewhat unsatisfied	0	0
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing sleep and energy changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing sleep and energy changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their sleep and energy changes.
[7]As a percentage of the participants for a given FHT duration experiencing sleep quality changes.

Energy changes

A total of 69 participants out of the 108 confident survey participants indicated that they had changes in energy levels. Of this total, 25 indicated that they were more energized, 20 reported no change and 24 indicated they were less energized (Table 4.116). For the changes in energy level, 14 participants indicated they were satisfied, nine indicated they were somewhat satisfied, ten indicated that they were neither satisfied nor unsatisfied, 13 indicated they somewhat unsatisfied, three indicated they were unsatisfied and 20 participants did not indicate a satisfaction level (Table 4.117). Again it is unclear why so many participants did not indicate a satisfaction level. Differences in energy level changes (Table 4.118) and satisfaction with energy level changes (Table 4.119) did not significantly vary based on FHT duration.

Table 4.116. How energy levels changed, as grouped by feminizing hormone therapy (FHT) regimen, among the 69 confident[1] participants who reported experiencing sleep and energy changes.

Regimen	n[2]	n[3]	% [4]	Energy level change	n[5]	%[6]
Estrogen only	16	11	69	More energized	2	18
				No change	2	18
				Less energized	7	64
Antiandrogen only	1	0	0	No sleep or energy change reported		
Estrogen + Progesterone	23	16	70	More energized	8	50
				No change	5	31
				Less energized	3	19
Estrogen + Antiandrogen	28	16	57	More energized	6	38
				No change	3	19
				Less energized	7	44
Estrogen + Testosterone	1	1	100	More energized	0	0
				No change	0	0
				Less energized	1	100
Estrogen + Progesterone + Antiandrogen	38	24	63	More energized	9	38
				No change	9	38
				Less energized	6	25
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	More energized	0	0
				No change	1	100
				Less energized	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing sleep and energy changes.
[4]The percentage of confident participants using the given regimen who reported experiencing sleep and energy changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who reported their energy levels changing by the given amount.
[6]As a percentage of the participants for a given FHT regimen experiencing energy level changes.

Table 4.117. How satisfied with the changes to their energy levels the 69 confident[1] participants who reported experiencing sleep and energy were, as grouped by feminizing hormone therapy (FHT) regimen.

Regimen	n[2]	n[3]	%[4]	Satisfaction	n[5]	%[6]
Estrogen only	16	11	69	Satisfied	1	9
				Somewhat satisfied	1	9
				Neither satisfied nor unsatisfied	2	18
				Somewhat unsatisfied	4	36
				Unsatisfied	1	9
Antiandrogen only	1	0	0	No energy change reported		
Estrogen + Progesterone	23	16	70	Satisfied	3	19
				Somewhat satisfied	3	19
				Neither satisfied nor unsatisfied	3	19
				Somewhat unsatisfied	2	13
				Unsatisfied	0	0
Estrogen + Antiandrogen	28	16	57	Satisfied	5	31
				Somewhat satisfied	2	13
				Neither satisfied nor unsatisfied	2	13
				Somewhat unsatisfied	2	13
				Unsatisfied	2	13
Estrogen + Testosterone	1	1	100	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	100
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen	38	24	63	Satisfied	5	21
				Somewhat satisfied	3	13
				Neither satisfied nor unsatisfied	3	13
				Somewhat unsatisfied	4	17
				Unsatisfied	0	0
Estrogen + Progesterone + Antiandrogen + Testosterone	1	1	100	Participant did not respond		

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]The number of confident participants using the given regimen.
[3]The number of confident participants using the given regimen who reported experiencing sleep and energy changes.
[4]The percentage of confident participants using the given regimen who reported experiencing sleep and energy changes out of the total confident participants using the given regimen.
[5]The number of confident participants using the given regimen who were the given satisfaction level with their sleep and energy changes.
[6]As a percentage of the participants for a given FHT regimen experiencing energy level changes.

Table 4.118. How the energy levels changed, as grouped length of time[2] using feminizing hormone therapy (FHT), among the 69 confident[1] participants who reported experiencing sleep and energy changes.

FHT time	n[3]	n[4]	%[5]	Energy level change	n[6]	%[7]
< 3 months	3	3	100	More energized	1	33
				No change	1	33
				Less energized	1	33
3 to < 6 months	7	3	43	More energized	0	0
				No change	1	33
				Less energized	2	67
6 months to < 1 year	11	6	55	More energized	1	17
				No change	2	33
				Less energized	3	50
1 year to < 5 years	66	41	62	More energized	16	39
				No change	12	29
				Less energized	13	32
5 years to < 10 years	16	12	75	More energized	6	50
				No change	4	33
				Less energized	2	17
10 or more years	4	4	100	More energized	1	25
				No change	0	0
				Less energized	3	75

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing sleep and energy changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing sleep and energy. changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who reported their energy levels changing by the given amount.
[7]As a percentage of the participants for a given FHT duration experiencing energy level changes.

Table 4.119. How satisfied with the changes to their energy levels the 69 confident[1] participants who reported experiencing changes to their sleep and energy were, as grouped length of time[2] using feminizing hormone therapy (FHT).

FHT time	n[3]	n[4]	%[5]	Satisfaction	n[6]	%[7]
< 3 months	3	3	100	Satisfied	1	33
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	0	0
				Somewhat unsatisfied	1	33
				Unsatisfied	0	0
3 to < 6 months	7	3	43	Satisfied	0	0
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	33
				Somewhat unsatisfied	0	0
				Unsatisfied	1	33
6 months to < 1 year	11	6	55	Satisfied	0	0
				Somewhat satisfied	2	33
				Neither satisfied nor unsatisfied	1	17
				Somewhat unsatisfied	0	0
				Unsatisfied	1	17
1 year to < 5 years	66	41	62	Satisfied	9	22
				Somewhat satisfied	5	12
				Neither satisfied nor unsatisfied	6	15
				Somewhat unsatisfied	9	22
				Unsatisfied	0	0
5 years to < 10 years	16	12	75	Satisfied	3	25
				Somewhat satisfied	2	17
				Neither satisfied nor unsatisfied	1	8
				Somewhat unsatisfied	1	8
				Unsatisfied	1	8
10 or more years	4	4	100	Satisfied	1	25
				Somewhat satisfied	0	0
				Neither satisfied nor unsatisfied	1	25
				Somewhat unsatisfied	2	50
				Unsatisfied	0	0

[1]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[2]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT for the given time who reported experiencing sleep and energy changes.
[5]The percentage of confident participants having used FHT for the given time who reported experiencing sleep and energy changes out of the total confident participants having used FHT for the given time.
[6]The number of confident participants having used FHT for the given time who were the given satisfaction level with their sleep and energy changes.
[7]As a percentage of the participants for a given FHT duration experiencing energy level changes.

CHAPTER 5

DISCUSSION

This study investigated the combinations of sex steroids, antiandrogens, and progestogens that transgender and gender diverse (TGD) people commonly use for feminizing hormone therapy (FHT), as well as the risks, results, and satisfaction with the results these participants experienced due to their FHT. Information on use of non-prescribed medication, age, frequency of hormone testing, nicotine use, and reported presence of testicles was also collected to attempt to identify any confounding factors for FHT outcomes.

Given the current sociopolitical climate and this survey's origin from public university in a state that has instituted restrictions on FHT, there was a worry that TGD people might fear that this survey was malicious. This sentiment was expressed in a comment by a member of one of the chat groups that the survey link was posted to originally. Thus, having 175 participants initiate the survey process was higher than anticipated. Of these 175 participants, 126 completed the survey. However, 18 of the 126 participants were not sure of FHT drug dosage information, and these surveys were excluded from the data analysis of any questions dealing with the physiological results experienced from FHT and participant's satisfaction with these results. Results for general parameters not related to drug dosage were presented in tandem for the 126 eligible participants and the 108 dose-confident participants to illustrate that there were no differences between the two populations. Finally, if all the potential survey questions applied to a given participant, the survey was 96 questions long for them and thus represented a significant time investment for them as

demonstrated by the fact the mean length of time to take the survey was 12 minutes (this average excludes one outlier who took 173 hours to complete the survey).

Demographics

Over 90% of the participants that completed the survey were between the ages of 18 and 44 and over 85% identified as white or Caucasian. Data collected from TGD people using FHT at six U.S. academic centers by Misakian et al., (2025) exhibited comparable racial demographics with 82% of their cohort reporting their race as Caucasian or white. The survey broke up FHT drug use length into the following categories: less than three months, three to less than six months, six months to less than a year, one year to less than five years, five years to less than ten years, and ten or more years. Of the 108 confident participants, over 60% fell in the category of one year to less than five years. In retrospect, the quality of the results pertaining to physiological changes resulting from FHT could have been enhanced if this time category had at least been broken up into two parts covering one year to less than 2.5 years and 2.5 years to less than five years, as this would have allowed a better analysis of if physiological changes such body fat redistribution and muscle mass changes occurred earlier or later in this five year period.

Regimens

Due to a diverse range of available FHT medications, 21 unique combinations of hormones and antiandrogens were utilized by the 108 confident survey participants. This diversity of regimens utilized by the survey participants illustrates the lack of concise and unified guidelines for FHT. Most of the regimen diversity resulted from the use of several individual or combinations of antiandrogens. For meaningful comparisons with only 108 participants, the regimens were grouped into four main categories, estrogen only, estrogen and antiandrogen, estrogen and progesterone, and estrogen plus antiandrogen and progesterone. Three other regimens consisting

of antiandrogen only, estrogen and testosterone, and estrogen plus antiandrogen, progesterone, and testosterone contained only one participant utilizing them each.

The hormone use for FHT in the current research was somewhat different from that reported by Fisher et al., (2016). No participants in the Fisher study were using injectable estradiol in any form compared to 38% injectable estradiol use in the current research. A much lower percentage of participants were using cyproterone acetate, and a much higher percentage were using finasteride or spironolactone in the current research compared to the Fisher cohort. These differences could be in part due to the geographical differences between the Fisher cohort and the cohort in the current research, as the Fisher cohort was based in Italy, and this study's sample was collected through snowball sampling seeded initially in the United States of America. Support for the hypothesis of a geographical difference may be supported by use differences of cyproterone acetate, which is approved for use in Europe but has not been approved by Food and Drug Administration for prescriptions in the United States.

Estrogen only regimen

In this study, 16 participants were utilizing an estrogen only FHT regimen, and the physiological changes in parameters such as breast growth, skin texture and muscle mass and satisfaction with these changes did not vary between this regimen and the estrogen plus antiandrogen regimen which was utilized by 28 participants. The estrogen only regimen differed from the estrogen plus progesterone (23 utilizers) and estrogen plus progesterone and antiandrogen regimen (38 utilizers) in only one aspect, which was body fat redistribution. Utilizers of the regimens containing progesterone as a component were more likely to report changes to their hips and buttocks fat distribution than those without progesterone as a component. From an endocrine standpoint providing only exogenous estrogen would be effective as it would provide feminizing

changes such as breast growth and gynoid fat redistribution, while reducing androgen production. In humans, estradiol negatively impacts the production of kisspeptin in the hypothalamus and this decrease in kisspeptin results in less GnRH and subsequently less LH and FSH (Xie et al., 2022). LH is needed to stimulate Leydig cells in the testes to produce testosterone. As long as enough exogenous estradiol was provided to decrease testosterone levels to the levels found in cisgender women, the high androgen concentrations which cause muscle mass, hair growth, and red blood cell production differences between the sexes would be eliminated. Other recent data suggests that injectable estrogen monotherapy is sufficient to lower testosterone levels (Misakian et al., 2025) to hormone levels consistent with baselines established by comparing with cisgender women.

In the current research 99% of participants were using estrogen as a component of their FHT, making estrogen the most used FHT medication. There were no statistically significant differences between results or risk rates when comparing oral administration with other administration routes. The lack of statistically significant associations between oral and parenteral administration route and subsequent fat mass or muscle mass changes is contrary to findings by Meinhardt and Ho (2006) as well as Glick et al., (2018), though this may be due to the self-reporting nature of the survey as compared to actual measurements made by the researchers in the other studies. It is not uncommon for TGD people to anecdotally report in social media forums that they experienced improved results when using injectable estradiol, so providing results in the current research that counter this claim is valuable. Further research should be carried out to confirm FHT can be provided orally or by injections with no differences in outcome.

Six participants using the estrogen only regimen were over the age of 45, the median age of menopause (Ali et al., 2023). Of the participants over 45 years old, all had been taking FHT for over a year, four were using patches, one was using sublingual tablets, and one was using oral

tablets. Two participants were on the very low dose estrogen that would likely result in a menopause-like hormonal profile. The others were using doses of estrogen comparable to their peers, excluding one who was using a supraphysiological dose of estrogen. There are no data suggesting FHT is contraindicated at any age (Cheung et al., 2023), but research should be promoted to determine if age related recommendations in the amount of estrogen supplementation for FHT should be instituted, as post-menopausal cisgender women have a drastic reduction in blood estrogen levels (Wang et al., 2025), and cisgender men have a continuous decline in androgen production after middle age (Handelsman et al., 2015) which can also lead to a corresponding decrease in blood estrogen levels. Given that oral estrogen administration can be associated with cardiovascular issues (Bagot et al., 2010) and the incidence of estrogen dependent breast cancer is increasing in the general population of women (Bazzi et al., 2023), insuring that older FHT users do not utilize too much estradiol is important.

While information about the type of injectable estradiol participants used was collected, information on the form of estradiol for other formulations was not. Estradiol tablets may not have been 17β-estradiol, as ethinylestradiol also comes in tablet form. For participants using oral or sublingual estradiol tablets and getting some medications through non prescription sources (five participants), they may have been using off-label birth control tablets, which contain ethinylestradiol. Additionally, some healthcare providers prescribing estrogen tablets may not have been aware of the health hazards associated with ethinylestradiol, so it is also possible any of the remaining 49 participants using estrogen tablets were prescribed ethinylestradiol. Questions asking about the form of estrogen that participants taking estrogen tablets were using should have been included.

Antiandrogen regimens

Although recent data suggests that injected estrogen FHT monotherapy is sufficient to lower testosterone levels (Misakian et al., 2025), the use of antiandrogens in FHT is common. 62% of the confident survey participants in the current research were using an antiandrogen. Interest in utilizing antiandrogens persists in FHT users due to longstanding belief in its necessity to antagonize androgen action, originating from a landmark research report which suggested FHT efficacy was improved when an antiandrogen was included (Prior et al., 1989). As mentioned previously, in the current research, the inclusion of antiandrogens in FHT regimens did not provide any benefit relative to those FHT regimens without them with regard to reported physiological changes and the satisfaction with these changes. Admittedly, because so many different antiandrogens were used by the survey participants, grouping them all together under the heading antiandrogen was necessary from a statistical standpoint, but in doing so the benefits of one particular antiandrogen could be masked by the lack of benefits of the others. Interestingly, participants in the estrogen and antiandrogen regimen group were less likely ($P = 0.0002$, data not shown) to have blood hormone levels within the target range for their gender. Difficulty in reaching target blood hormone ranges in conjunction with known risks associated with individual antiandrogens, such as the increased risk of hyperkalemia, meningioma, and liver toxicity associated with spironolactone (Yang et al., 2018), cyproterone acetate (Lee et al., 2022), and bicalutamide (Wilde et al., 2023), respectively, may indicate that the addition of an androgen receptor antagonist is at odds with the goals of FHT.

Progesterone

In the current research, 58% of the survey participants used progesterone in their FHT regimens. Despite the continued belief in the benefit of progesterone in FHT among TGD people

(Bahr et al., 2023), there has been a dearth of research proving benefits to its use. In the present research, inclusion of progesterone in FHT regimens was associated with a significant increase in fat distribution to hips and buttocks. Estrogen is known to control gynoid fat deposition in FHT (Elbers et al., 1999), but findings suggesting progesterone assists in fat redistribution indicates it may be beneficial. In addition, Djikman et al., (2025) recently reported that the inclusion of progesterone in FHT enhanced breast growth in randomized control trials.

Do it yourself

The rate of DIY use in the current research (18%) was lower than the 26.8% rate Rotondi et al., (2013) reported. Additionally, 18 of the 19 participants (95%) reporting using DIY FHT reported having their blood hormone levels checked, which is higher than was anticipated based on reports from Mepham et al. (2014), which suggested only approximately one third of DIY users would receive physical monitoring, but as indicated, their results were only applicable to clinics in the United Kingdom. The survey question asked participants if they received any of their medications from non-prescription sources, so it is possible that some participants recorded as using DIY FHT were sourcing part of their medications from prescription sources, and part through non-prescription sources. It is possible that participants were supplementing prescribed FHT regimens with DIY components their prescribers were reticent to provide.

Unexpectedly, five participants were taking cyproterone acetate, which is not approved for prescription use in the United States (Tollinche et al., 2021), but while three of the five participants using cyproterone acetate indicated that they received some of their FHT medications through non-prescription sources, two indicated that they did not. The findings associated with these two participants could imply that the survey was spread outside of the United States or that these participants had links to other countries from which they sourced their medications. Without

collecting data about precisely where these participants sourced their medications it is impossible to verify these suppositions.

While there was no statistically significant difference in the rates of hormone level test frequency between users of DIY FHT and those who source their FHT through official routes, those participants who never had their hormone levels checked were exclusively users of DIY FHT, while those participants getting hormone levels checked more frequently than every three months were exclusively users of prescription-only FHT. Nonetheless, the presence of any testing being performed for those using DIY hormones is good, as it indicates that the support systems and guidelines currently in place are enough to direct these participants towards more healthy and careful medication use.

Nicotine

Due to a lack of information regarding potential influence of nicotine use on FHT outcome and the known increased cardiovascular risk associated with nicotine use, assessing nicotine use in the TGD population is important. In this study only 13% of the confident participants used nicotine products, which is statistically equivalent to the expected rates for the general population of the United States of America, based on National Health Interview Survey data (Cornelius et al., 2023). This contradicts assumptions that TGD people would have increased nicotine use rates, as was reported in Belgium (Wierckx et al., 2012). There were no statistically significant correlations between nicotine use and cardiovascular events or FHT outcomes.

Psychiatric medication

As TGD people experiencing minority stress may have an increased rate of psychiatric conditions, assessing potential effects of psychiatric medication on FHT outcome is important. In this study, 45% of the confident participants were using some kind of psychiatric medication,

which is significantly higher than the 16.7% value reported by Moore and Mattison's (2017) analysis of the 2013 Medical Expenditure Panel Survey for the number of adults in the United States of America filling on or more psychiatric drug prescriptions. There were no statistically significant correlations between psychiatric medication use and cardiovascular risk or FHT outcomes.

Testing

In the current study, participants utilizing FHT for less than one year had their blood hormone levels checked more frequently than those that had been undergoing FHT for greater than one year. This is in keeping with the guidelines established by the World Professional Association for Transgender Health, suggesting "laboratory monitoring of sex steroid hormones every three months during the first year of hormone therapy or with dose changes until a stable adult dosing is reached, followed by clinical and laboratory testing once or twice a year" (Coleman et al., 2022, p. 119). Besides having their blood hormones tested more frequently, the population of participants using FHT for less than one year also had a reduced likelihood of missing or postponing doses of their FHT, compared to those using FHT for greater than one year. This finding may suggest that FHT users become more relaxed about their FHT as its duration extends throughout the years. Finally, participants that had their testes removed did not have blood hormone levels tested as frequently as those that still had testes. This could indicate sex hormone levels become easier to control once exogenously sourced hormones become the principle hormones, but this needs to be tested by analyzing hormone concentrations in these participants.

Health Risks

There did not appear to be any correlation between cardiovascular risk and specifics of FHT regimen, though all five participants reporting a cardiovascular event, representing

approximately 4.6% of the sample, had been taking estrogen for at least one year. A 4.6% incidence rate of any cardiovascular event is not outside of expected percentages compared to data presented by the Journal of the American College of Cardiology (Wadhera, Dhruva, Bikdeli et al., 2026). As those who may have died due to cardiovascular event would not be able to take the survey, proper analysis of cardiovascular associated risks with FHT would require patient data from clinics or a longitudinal cohort study.

Timeline effects

Survey participants were asked if they experienced changes in the following: body hair, breast growth, muscle mass, ejaculate volume, erection frequency, fat redistribution, facial hair, libido, maximum erectile volume, skin texture, and sleep and energy levels. In each category, except for body hair, and facial hair, at least one participant reported experiencing changes within three months. For body hair and facial hair, the first recorded changes happened in the three to six months time frame. Body hair softening, fat redistribution, and muscle mass decrease were associated with length of time taking FHT, with a statistically significant increase in percentage of participants experiencing each result as time passed ($P = 0.0044$, 0.0002, and 0.0048 respectively). Breast growth was the best indicator of change as 98% of participants experienced breast growth, and skin changes was the second-best indicator of change as 89% of participants experienced skin changes. Feminizing hormone therapy use was associated with a decrease in oiliness and a softening of the skin. Changes in erection frequency, ejaculate volume and libido were experienced by 87, 84 and 85% of the confident survey participants, respectively. The high prevalence of participants undergoing FHT experiencing changes in breast growth, skin texture, erection frequency, libido and ejaculate volume makes these results key indicators to measure to assess FHT success.

The percentage of the confident survey participants that reported experiencing changes in body hair, muscle mass, fat redistribution, facial hair, maximum erectile volume, and sleep and energy levels were 73, 76, 81, 49, 56 and 64%, respectively. Thus, these parameters are less reliable in assessing the success of FHT. Regretfully, the survey was not designed to assess participant satisfaction for results they did not experience. For example, for the 51% of survey participants that did not experience a change in facial hair, it is unknown whether they were satisfied or dissatisfied with this result. In addition, the survey did not ask any questions about participant weight before and after using FHT, the data from which could have led to further insights into muscle mass and fat deposition changes being masked if the participant gained a lot fat mass.

Participant choice in regimen was different ($P = 0.0004$) across length of time having used FHT (Table 5.1). While no participants use progesterone before six months, the majority of participants in the one to five year time frame incorporate progesterone into their regimen. There is a correlation between length of time using FHT and both muscle mass changes and fat redistribution, so when controlling for the association between specifics of FHT regimen and length of time having used FHT, the associations between progesterone use in regimens and increased likelihood for fat redistribution and reduced upper body muscle mass are no longer significant. Despite no correlation between libido and length of time having used FHT, the association between FHT regimen and libido changes is no longer significant when controlling for length of time having used FHT. The increased likelihood of participants with testes to have mood changes compared with participants lacking testes remained significant when controlling for length of time taking FHT. The increased likelihood of participants using the estrogen and antiandrogen FHT regimen to have blood hormone levels out of range for their gender also remained significant when controlling for length of time taking FHT.

Table 5.1. How feminizing hormone therapy (FHT) regimen use varied, as grouped by length of time[1] using FHT, among the 108 confident[2] participants using one of the four main FHT regimens.

FHT time	n[3]	FHT regimen	n[4]	%[5]
< 3 months	3	Estrogen	1	33
		Estrogen + Progesterone	0	0
		Estrogen + Antiandrogen	2	66
		Estrogen + Progesterone + Antiandrogen	0	0
3 to < 6 months	7	Estrogen	2	29
		Estrogen + Progesterone	0	0
		Estrogen + Antiandrogen	5	71
		Estrogen + Progesterone + Antiandrogen	0	0
6 months to < 1 year	11	Estrogen	1	9
		Estrogen + Progesterone	1	9
		Estrogen + Antiandrogen	6	55
		Estrogen + Progesterone + Antiandrogen	3	27
1 year to < 5 years	66	Estrogen	6	9
		Estrogen + Progesterone	20	30
		Estrogen + Antiandrogen	10	15
		Estrogen + Progesterone + Antiandrogen	30	45
5 years to < 10 years	16	Estrogen	3	19
		Estrogen + Progesterone	2	13
		Estrogen + Antiandrogen	5	31
		Estrogen + Progesterone + Antiandrogen	4	25
10 or more years	4	Estrogen	3	75
		Estrogen + Progesterone	0	0
		Estrogen + Antiandrogen	0	0
		Estrogen + Progesterone + Antiandrogen	1	25

[1]Length of time taking estrogen used as a proxy for length of time taking any feminizing hormone therapy.
[2]Confident participants are those participants who were taking FHT, consented to the survey, were not minors, finished the entire survey, and knew all their information without any uncertainty regarding medication dosage or administration method.
[3]The number of confident participants having used FHT for the given time.
[4]The number of confident participants having used FHT of the given regimen for the given time.
[5]The percentage of confident participants having used FHT of the given regimen for the given time out of confident participants having used FHT for the given time.

Satisfaction of those experiencing change

Across all participants experiencing a given change, regardless of FHT regimen utilized, or length of time taking FHT, more participants were satisfied or somewhat satisfied with the changes they experienced because of their FHT (74% of responses to satisfaction questions were satisfied or somewhat satisfied) than unsatisfied or somewhat unsatisfied (12% of responses to satisfaction questions were unsatisfied or somewhat unsatisfied). This finding provides further support that FHT can provide satisfactory results for the treatment of gender dysphoria.

Testes

No participant reported removal of testes prior to one year on FHT. Even in the five years to less than ten years category, over half of participants still had testes. Surgery is expensive, with a median cost of orchiectomy at 5,682$ (Nguyen et al., 2024) and vaginoplasty at 59,673$ (Downing et al., 2022). Surgery is also anxiety inducing (Shebl et al., 2025) and those early in their FHT treatment may be unsure if they wish to receive this treatment. As indicated earlier, endocrine control of TGD people using FHT is simpler without testes. In cases of insufficient HPG axis suppression via FHT regimens without antiandrogens, insurance coverage of orchiectomy/vaginoplasty for the removal of testes could lead to reduced long term health risk owing to the ability to cease the potentially hazardous (Yang et al., 2025, Wilde et al., 2023, Lee et al., 2022) antiandrogen use.

Assuming lack of participant interest in testes removal or failure of insurance company support, drug treatments which upregulate aromatase activity, increase aromatase half-life or increase aromatase transcription rates in adipose tissue, thereby leading to a simultaneous increase in estradiol and decrease in testosterone, may be an elegant method of dealing with insufficient HPG axis suppression by FHT regimens which do not include an antiandrogen. However, while

there are prescription drugs approved by the Food and Drug Administration to inhibit aromatase activity, developed to treat estrogen dependent reproductive cancers, drugs to promote aromatase activity are not currently available. Due to a limited pool of potential FHT customers, pharmaceutical development of such drugs may not happen.

Appropriately, participants generally stopped antiandrogen use after removal of testes, suggesting that their healthcare providers are proceeding with hormone administration logically based on the known generation of androgens in the testes. The continued use of antiandrogens after testes removal was mostly associated with participants between 25-44 years of age who had been using estrogen for at least one year. Additionally, the fact that 5α-reductase inhibitors were the most common antiandrogens used in this group may suggests that these participants are seeking to limit DHT activity. It is possible this is based on concerns about androgenic alopecia.

Given that all of the seven participants taking antiandrogens after testes removal were also using progesterone, increased education about hormone synthesis pathways and enzyme affinities, such as progesterone's higher binding affinity with 5α-reductase than testosterone (Russell and Wilson, 1994) and the likelihood of very low DHT levels if testosterone is already low due to testes removal may be beneficial in reducing antiandrogen use after testes removal. However, the use of 5α-reductase inhibitors is generally well tolerated (Hirshburg et al., 2016), so continued unnecessary use is not likely to be particularly hazardous. Unfortunately, four of the seven participants using an antiandrogen while lacking testes reported getting at least one of their medications through non-prescription sources. These four participants may not be getting advice from an endocrinologist or may be ignoring the advice given. The three participants receiving prescribed 5α-reductase inhibitors after testes removal may indicate a lack of knowledge by their medical provider. Asking participants using DIY medications further survey questions regarding

which specific drugs they were getting DIY may have been useful. In addition, asking all prescription drug source participants if their physician was a reproductive endocrinologist or general practitioner would have helped shed more light on the possibility of poor physician advice based on a lack of knowledge regarding FHT.

Summary

A goal of this study was to determine what hormone regimens TGD people were using. 21 different FHT regimens were being used by the 108 confident survey participants, and the range of the chemical forms of the sex hormones being utilized as well as their doses and administration route only increased the 108 participants' FHT regimen diversity. Equivalence of results suggest that FHT guidelines which simplify FHT regimens could be established. The inclusion of antiandrogens in FHT is unnecessary based on the lack of significant differences in outcomes or participant satisfaction between regimens containing and lacking an antiandrogen. In contrast, the inclusion of progesterone in FHT regimens may be useful due to the association between FHT regimens containing progesterone and increased fat redistribution and upper body muscle mass reduction, though testing to determine to what degree this association is due to the change in regimen used over time is necessary. In addition, the current results indicated there was no difference in reported results between oral administration and other administration routes. While further research is needed, in conjunction with data suggesting parenteral estradiol effectively suppresses androgens without the need for an antiandrogen (Misakian et al., 2025), this research suggests the recommended regimen would consist of progesterone and parenteral estradiol administration.

CHAPTER 6

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